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# Antic

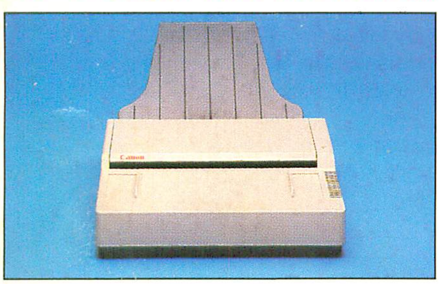
The ATARI Resource

FEBRUARY 1988 VOLUME 6, NUMBER 10

## SCANdalize!

## Do *anything* to real images

## ST SCan Reviewed





### 8-BIT

- *First-Time Users Handbook*
- *Animation Moviemaker*
- *Killer Speed-Chess*
- *Boink Show in BASIC*
- *7 Easy-To-Type Programs*
- *9 Reviews*

### ST

- *6 Flashy Animation Type-ins*
- *14 Reviews*

## Transputer— Atari's New "Super-Computer"

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— Transform and copy commands allow copying, moving, rotating and alignment of items. Mirror objects about any axis and merge drawings together for true computerized cut and paste.
— Symbols can be created and stored for later recall. They can be cataloged in directories for easy accessibility.
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**Proven CAD software for only $195.**

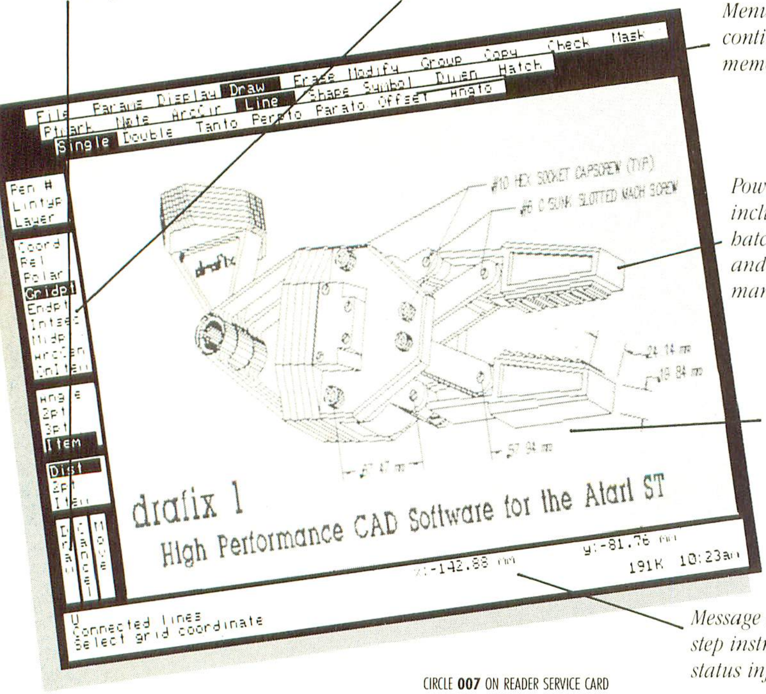
Although Drafix 1 is newly available for the Atari ST it's been around long enough to be described by PC Magazine and others as "The best CAD buy in town" with "Incredible performance for the price."

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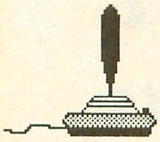
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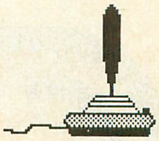
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Astrogrover
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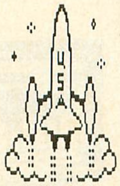


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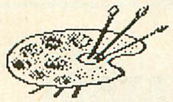


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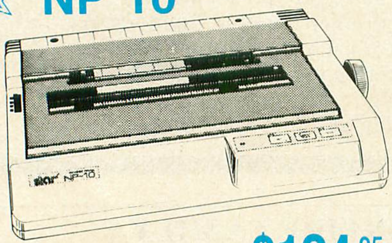
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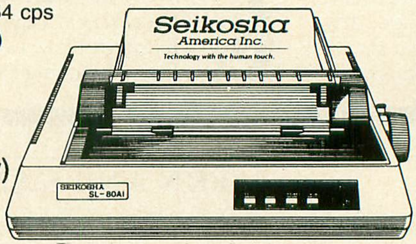


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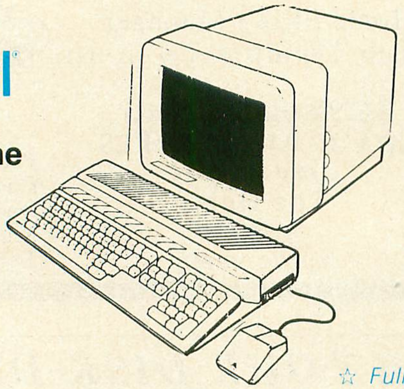



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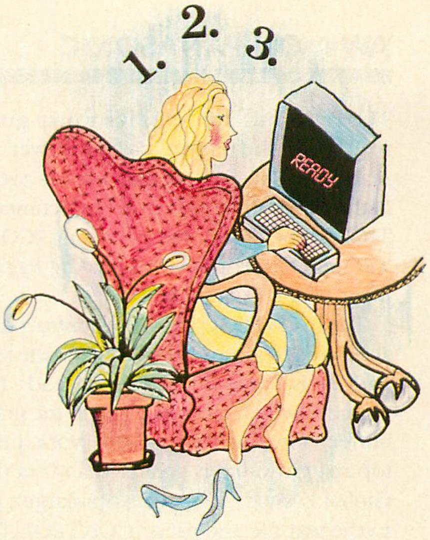
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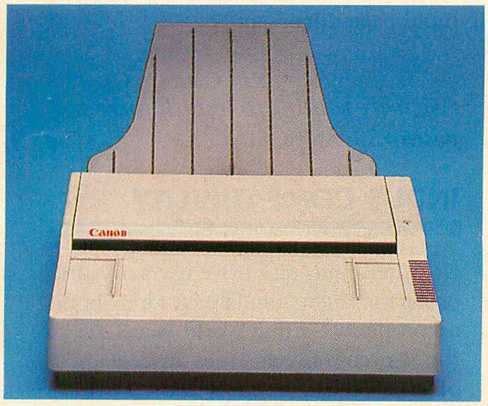
The ATARI Resource



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## DEPARTMENTS



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## ST RESOURCE





ST RESOURCE/43

**Antic**
The ATARI Resource

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Editorial submissions should include text and program listings on disk and paper. Submissions will be returned if stamped, self-addressed mailer is supplied. **Antic** assumes no responsibility for unsolicited editorial material.



# I/O Board

## MEMORY EATER

***Antic** thanks readers Bill Koonz of Schenectady, NY and Alfred Hicks of Westford, MA who point out an inaccuracy in* XL Memory Eater *(Tech Tips, **Antic**, November 1987). It's not in fact the 800XL operating system that appends 16 garbage bytes to your BASIC files, but Atari BASIC, Revision B. Using Revision C or such BASICs as BASIC XL/XE from OSS or Turbo BASIC should take care of this problem.*—ANTIC ED

## NAVARONE HELPFUL

I ordered a clock card from Navarone Industries. However, the battery was discharged when I received it, and the card failed to work after replacing the battery several times.

When I called the company, the person I talked to was so nice and helpful. Within two weeks of returning the clock card to Navarone, I received a new unit. I've had it for more than a year and it keeps perfect time. I could not be more pleased with Navarone. It's pleasant to do business with a company that stands behind its products and is so nice to its customers.

James Mann
Mullan, ID

## 8-BIT MIDI

In the June, 1985 issue of **Antic** you heralded the coming of MIDI (Musical Instrument Digital Interface) long before anyone else thought this topic would catch on. But with the advent of the Atari ST computers, it seems that our old friend, the 8-bit machine, has been slighted again. Isn't there *any* 8-bit MIDI software?

Dan Stuart
Roseville, MN

*Hybrid Arts, the same company listed in that June, 1985 article,* Play it Again, Atari, *has expanded its product line—while prices have dropped dramatically. The hardware-software MidiTrack II is now $174 and MidiTrack III for the 130XE is $187. Hybrid Arts is at 11920 W. Olympic Blvd., Los Angeles, CA 96064. (213) 826-3777.*—ANTIC ED

## AW+ ON PANASONIC

The Panasonic 1091 printer works quite well with the Epson printer driver in AtariWriter Plus, except that it prints a zero at the top of the first page of a document. This can be eliminated by typing [CONTROL] [O], 24, [RETURN] at the *beginning* of the document.

The [CONTROL] [O] is the control character used to place printer codes in the text and 24 is Panasonic's decimal code for Cancel—which clears the text in the print buffer. However, this will *not* work if the top margin value is greater than 0 in the Global Format. To set the top margin, go to the text file and press [CONTROL] [T], then type in the desired margin setting. (I also found that this procedure doesn't work when I print selected pages of a multi-page document.)

John Swain
San Gabriel, CA

*(We were unable to test all these suggestions.*—ANTIC ED)

## INDUS COMPATIBILITY

Do other Indus disk drive users have this problem? Flight Simulator II rarely boots up properly. Getting World War II Ace to run is even tougher. Does anyone know of a fix? I'd hate to buy a new disk drive.

Victor Decarlo Jr.
Hackensack, NJ

*Our copy of Flight Simulator II runs fine on our Indus drives. Try checking your drive speed and cleaning your read/write head.*—ANTIC ED

## ATARI CAME THROUGH

My early model 520ST developed problems with the power supply and video output. I contacted Atari Corp., and a manager of customer relations phoned me back and promptly arranged for exchange of the defective computer.

I can tell you that I've been most pleased with the ST computer and will not hesitate to purchase more Atari systems in the future. Atari Corp. is serious about customer satisfaction.

Russell Miller Jr.
New Castle, DE

## XMM801 WOES

The manual for my Atari XMM801 printer says I need an 9-bit screen-dump program that can dump to an Epson printer. Where do I get such a program? Also, I've found that I only get garbage characters when I try to print with Broderbund's Print Shop.

William Tilley
Vestal, NY

*Several screen-dump programs will do the job, including* Kwik Dump *(**Antic**, March 1985) and Lister Plus ($19.95, The Catalog, AP0179). Regarding Print Shop, our review of the XMM801 (**Antic**, December 1986) said that the printer wouldn't work with Print Shop and no solution was on the horizon at that time.*

*But now, XLEnt Software has been working on an XMM801 translator disk for Print Shop. According to XLEnt's Linda Kubota-Barnes, Atari says the translator makes Print Shop "98% compatible" with the XMM801. "We can't guarantee 100% compatibility, but the only problems I've seen are with calendars," she says. You can get the translator by sending $10 to: XLEnt Software, P.O. Box 5228, Springfield, VA 22150.*— ANTIC ED

## CONQUERING "LORDS"

Here are some solutions for the problems mentioned in your review of Electronic Arts' Lords of Conquest (**Antic**, May 1987). First, if a map file can't be found, that's because it has the same number as another one on the disk. Second, the musical tribute at the end can be cut short by pressing the joystick trigger. Finally, don't reboot after each game. Just choose to play again and you'll return to the main menu.

Jason Strautman
CompuServe ID
72337,2611

## LABEL SPACING

I thoroughly enjoyed *Designer Labels* (**Antic**, April 1987), but the program wasn't exactly compatible with the brand of labels I used. My labels print out at a distance of 1 1/32 inches apart—instead of 1 inch exactly. How do I change the listing to accomodate different label formats? The only feature I need to change is the distance needed between labels.

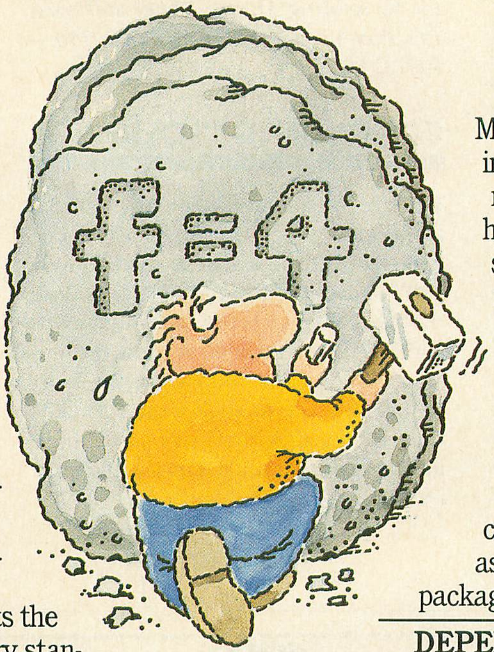
Andrew Weiner, DDS
Encino, CA

*Unfortunately, most printers cannot easily print a "one-time" 1/32-inch line feed between each label—which is all you need to do. Star printers, for example, can only advance the paper in increments of 1/144 of an inch, such as 1/144, 2/144, 3/144 and so on. The code to advance the paper 5/144, for example, would be:*

*LPRINT CHR$(27);"J";CHR$(5)*

continued on page 8

# MARK WILLIAMS C. AN ENLIGHTENING DEVELOPMENT FOR ATARI ST USERS.



If you've tried your hand at developing applications on the Atari ST, you know the problem. Programming tools aren't only hard to come by, they're hard to use. One might even say primitive. But now for some enlightening news: you can have all the power, portability and versatility of the C language from a leader in professional C programming tools, Mark Williams.

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Compile and link time in seconds.

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|---|---|
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| Megamax | 78.5 |

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*Sieve benchmark from Byte, 1983, done on one double-sided floppy disk and included RAM disk.

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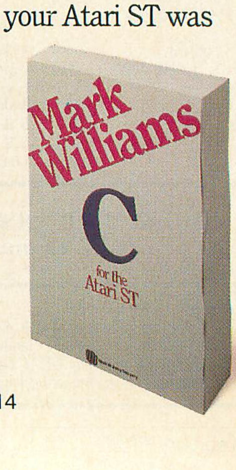
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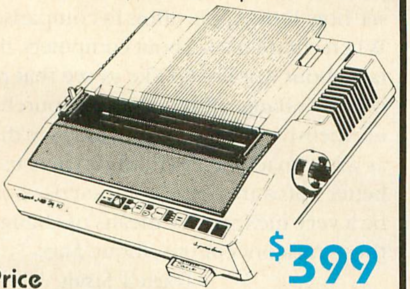
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|---|---|
| Leader Board Golf | 26.09 |
| Leader Board - Tournament | 13.03 |
| A-Calc | 39.15 |
| Flash! | 26.09 |
| Hard Disk Toolkit | 19.56 |
| Hard Disk Accelerato | 26.09 |
| Chessmaster 2000 | 30.44 |
| Autoduel | 33.71 |
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continued from page 5

*To find the proper printer code for 1/32 of an inch, we calculate how many times 1/144 of an inch goes into 1/32 of an inch and place the result in our program line.*

*But this time the answer, 4.5, is not an integer and can't be used in the program's CHR$ function. The program patch below will alternately use a 4 and a 5 in the printer code, creating an average line spacing of 1/32-inch.*

*The variable "I" represents the number of labels printed so far. When "I" is odd, the printer receives the CHR$(4) character. Otherwise, the printer receives the CHR$(5) character.*

```
2265?#C2;CHR$(27);"J"; CHR$(4 +
(I/2 = INT(I/2)));:REM
CODE FOR STAR/GEMINI
```

*Here's the modification for Epson printers:*

```
2265?#C2;CHR$(27);"J"; CHR$(7 -
(I/4 = INT(I/4)));:REM
CODE FOR EPSON
```

—ANTIC ED

## RACAL-VADIC MODEM

A member of our Atari users group donated a Racal-Vadic model 1200V modem for our BBS. Unfortunately, we can't find a VA2055 power supply, or the specs or voltage for the pin-in. Can anyone help?

Ray St. Cyr
Nederland, TX

## PRINTER DRIVER

I have a Star NX-10 printer, a P:R: Connection from ICD and an Atari 130XE. I've found that you don't need a printer driver to use AtariWriter Plus with this system. When asked what printer you're using, press [H] for "other," and at the next menu press [E] for Epson FX-80. All extra printer functions will work fine. Use [CONTROL] [G] functions 4 and 5 for superscripts and subscripts—just as you would on an Atari XMM801 printer.

Randy Hefner
Vice President,
Hickory ACE
Hickory, NC

## ATARI FOR SCHOOLS

I wish Atari would initiate some type of educational program where schools received free or reduced-cost STs with practical software. Then educators could see how little Apple offers in comparison. When children talk about computers, they talk about Apples. I'd like to see that perception change. Parents want to purchase inexpensive computers, but they see them as game machines. School districts using better software—and computers—could be a very inexpensive means of changing these misconceptions about Atari.

Darrell Strait
Blue Springs, MO

## FLYING IN CIRCLES

A BASIC aviation program I've written for the Atari 800XL requires plotting several high-resolution circles in Graphics 8 mode. I use the following routine—which takes an abysmally long time:

```
CN 5 REM FILENAME = CIRCLES.BAS
PP 10 GRAPHICS 8
XL 20 COLOR 1:DEG
KK 30 X=77:Y=29:LET R=4:GOSUB 50
KL 40 X=93:Y=27:LET R=6:GOSUB 50
ZC 45 END
ZO 50 PLOT X+R,Y
OU 60 FOR ANG=0 TO 360 STEP 30
YM 70 PLOT X+R*COS(ANG),Y+R*SIN(ANG)
OD 80 NEXT ANG
ZZ 90 RETURN
```

Is there a faster machine language equivalent of steps 30-90 that I can call with the USR command?

Phil Howland
Hillsborough, CA

*Darek Mihocka's Graphics Utility Package in the article* G.U.P. the Great *(**Antic**, June 1985) should do what you want.*—ANTIC ED

## XE KEYBOARD HELP

I ran across a company called Best Electronics which supplies 130XE keyboard mylar film for $22. It's better than the original film, and it sure beats sticking your XE in the closet because some of the contacts on the keyboard film have broken. Best Electronics is at 2021 The Alameda, Suite 290, San Jose, CA 95126. (408) 243-6950.

J.A. Bader
Akron, OH

## TAX CHANGES

In view of the many changes in the 1987 tax code, would you consider an early publication of your excellent annual SynCalc spreadsheet Income Tax template? The November issue would not be too soon for coverage of this vital subject.

W.R. Waddell, Jr.
Harrisonburg, VA

*You have a good point, and we'll try to get the 1988 tax template into print as quickly as possible. However, when we received your letter in July, we were already finishing up this November, 1987 issue. And the advance IRS information we need for the tax template will not be released until much closer to the end of 1987. So it's just not realistic to expect the tax template before the March or April, 1988 issue. At least these issues are available the month before the cover date. For example, you can buy the April issue at the beginning of March. And look for the template on ANTIC ONLINE as early as February.*—ANTIC ED

## SEIKOSHA PROBLEM

The Seikosha SP-1000A printer is supposed to be Epson-compatible, but I can't get it to work with 1ST Word on my 1040ST. Can anyone help?

Stephen Shulman
Jamestown, NY

*Unfortunately, we have the same problem. Readers?*—ANTIC ED

## FLICKERS

Help! The light on my 1040ST disk drive flickers very dimly all the time. Is this normal? Where can I have it repaired?

Phillip Qualls
El Paso, TX

*That flickering light is completely normal and does not need to be repaired, according to Atari Engineering. You must have excellent eyesight, Phillip. We had never noticed that our own 1040ST drive lights flicker too, and we had to take the STs into a dark room before we could see it.*—ANTIC ED

## J.D. RULES!

Kudos to J.D. Casten! Maximillian B. (**Antic** Super Disk Bonus, September 1987) has sent me as close to the loonybin as I've ever been—great character graphics plus the all-around near-impossibility of winning.

Here are some loopholes I found in Casten's game that I feel he overlooked. If you press [BREAK] while in room 1, then type CONT, you'll find yourself in room 2—still with eight lives. You can reach room 3 the same way, but it doesn't work after that.

For other Max B. freaks, I will divulge the solutions to rooms 1 and 2. In room 1, take the rightmost brick of the four above the frazzies—that's what I call those things on the board—and place it above and to the right of the opening of the bottom section. Then seal that opening by grabbing the bottom brick on the far right, placing it next to the first brick. Release the frazzies, then escape through the small opening to the compartment you just sealed off, and wait. Shortly, all but one frazzie will enter the trap in the upper left corner of the screen. To trap that one, seal off the box the frazzies *were* in, and escape back to the compartment. When the left wall of the frazzie room opens, go through it into room 2.

In room 2, you'll need only one brick. To trap the frazzies, just consecutively cover one of the small opeings at the bottom, returning to the pile of bricks and waiting while the redirected frazzies interact. Then cover the opening to the left and repeat the process.

Fred Beondo

*(We were unable to test all these suggestions.*—ANTIC ED) ■

***Antic*** *welcomes your feedback, but we regret that the large volume of mail makes it impossible for the Editors to reply to everyone. Although we do respond to as much reader correspondence as time permits, our highest priority must be to publish I/O answers to questions that are meaningful to a substantial number of readers.*

***Send letters to: Antic I/O Board, 544 Second Street, San Francisco, CA 94107.***



*by* GREG KNAUSS

# Killer Chess

## *Two-player ACTION! shootout*

***Killer Chess brings a new frenzy of aggression to the classic game, as you mop up the chessboard without waiting for your opponent to make moves. This type-in program is written in ACTION! and requires the ACTION! language cartridge from Optimized Systems Software, as well as an 8-bit Atari computer with at least 32K memory and a disk drive. However, this month's $5.95 Antic Disk includes a special "runtime" version of Killer Chess that you can use without the ACTION! cartridge—plus two fast-moving bonus runtime games by the author.***

Unless you're a real fanatic or a tournament contender, I'll bet that you don't play much chess anymore. Let's face it, most "regular folks" find chess boring!

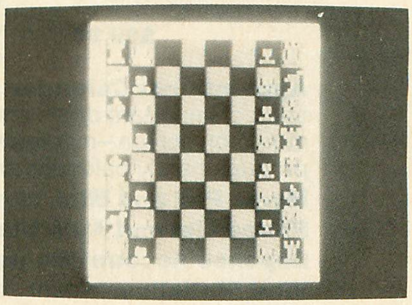
But now imagine a revitalized, fast-ACTION! chess—where the players *don't take turns.*

That's right. . . no turns. Killer Chess players make legal chess moves as fast as they can, deciding on instant strategies that they would have spent dull minutes pondering in a traditional game. Stodgy old chess becomes a fast-gun shootout.

Welcome to Killer Chess, written in ACTION! the fast, powerful programming language from Optimized Systems Software. You and your human opponent will use an Atari 8-bit computer and a pair of joysticks to battle it out in a radical new version of a traditional game.

### GETTING STARTED

TYPING IT IN: Insert the ACTION! cartridge into your 8-bit Atari and type in Listing 1, KILLER.ACT. Type carefully, because there isn't a TYPO II for ACTION! After you have a copy



of the complete program safely saved, go to the monitor by pressing [CONTROL] [SHIFT] [M] and compile the program by typing [C] [RETURN]. When the cursor starts blinking again, type [R] [RETURN] and the title page should appear.

MONTHLY DISK USERS: You can play Killer Chess without owning the ACTION! cartridge. Just insert your Antic Monthly Disk into your disk drive, remove all cartridges from your Atari (XL/XE owners should press the [OPTION] key) and turn on your Atari. When the DOS menu appears, just type [L][RETURN], then type KILLER.EXE [RETURN].

When the title screen is seen, press [START] to begin a game. When the

continued on page 12

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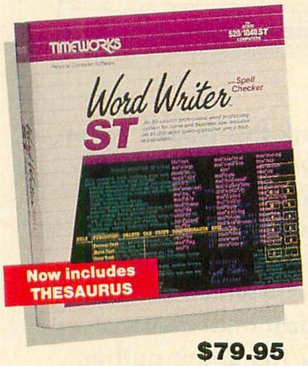
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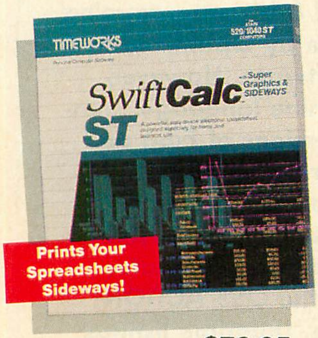



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game begins, both players will be able to simultaneously move their respective cursors around the board. With joystick 0, player 1 controls the white cursor and white pieces. With joystick 1, player 2 controls the gray cursor and gray pieces.

## PLAYING KILLER CHESS

Simply place the cursor over any piece you want to move and press the joystick button. Now move the cursor over a square that would be a legal move for that piece and press the button again. If the move is illegal, the computer will tell you so—with a rather unpleasant sound—and let you try again. Otherwise the piece will be placed at the new square. If you accidentally pick up a piece and don't want to move it, just replace the cursor over the piece you selected and press the button again. The piece will be dropped.

To capture an enemy, simply make a legal move on top of it. The offending piece will be removed from play. You can capture a piece your opponent is "holding." The piece isn't actually moved until it is set down again.

To win, just land one of your characters on top of the opponent's King. To return to the title screen, press [START] or wait about 10 seconds.

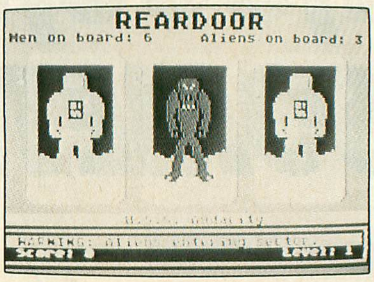
Killer Chess does not have castling or *en passant* moves, which are allowed under advanced chess rules but would be too confusing here.

## ABOUT THE PROGRAM

The biggest programming problem in Killer Chess was detecting illegal chess moves. My solution is quite simple and can be applied to any chess program. The method is even fast enough to be used with BASIC.

Here's what I did: When a piece is selected, its old position is recorded. Each new position chosen by a player is also recorded. The old position is then subtracted from the new position and stored in a "delta" value, one delta for X and one for Y. Delta means how much something changes. So if the new X position is 5 more than the previous one, the Delta X would be five. If the new Y position is 1 less than the old, Delta Y would be −1.

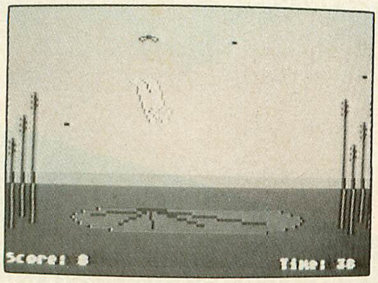
I then used IF statements to determine if the piece was allowed to move to that spot. For instance, a pawn is




**If you think this issue's Killer Chess is your kind of imaginative, fast-response Atari game challenge, you'll also enjoy our February Super Disk Bonus—which consists of two additional clever games by the same author, Greg Knauss.**

**Frog and Reardoor, the bonus games, feature outstanding graphic imagery. They have strong, simple storylines and require fast thinking as well as fast eye-hand coordination. Frog has a nature scenario that kids are sure to like. Reardoor is a nerve-wracking space shoot-up where you must zap monsters at uncomfortably close quarters.**

**All of Knauss's games are written in ACTION!, the powerful 8-bit programming language by Optimized Systems Software. However, the machine language "runtime" versions of Frog and Reardoor—also Killer Chess—on this month's Antic Disk can be played on any 8-bit Atari computer without the OSS ACTION! cartridge. (Runtime listings**



## Super Disk Bonus

*By "Killer Chess" author,* GREG KNAUSS

# Two Fast-Moving ACTION! Games

are impossible to print in the magazine, due to their extreme length.)

For ACTION! programmers, the original source code of all three games is also on the monthly disk.

### FROG & REARDOOR

Frog gives you or your kids the chance to vicariously live the everyday life of this commonplace amphibian. You will see a frog sitting complacently on a lily pad while fat, black flies make their way back and forth above the pond. Use your joystick to jump the frog in any direction and press the trigger button to zap the frog's tongue way out for a fly feed.

Reardoor's setting is not unlike the Transporter Room on the Enterprise. Except instead of Kirk and Spock beaming up, you have marooned space colonists and vicious lizard-like aliens desperately trying to board your rescue spacecraft.

You'll see three closed airlock doors and the control panel. The three airlocks will open, revealing two colonists and one alien. The doors close again in an instant and whatever was standing in them will have entered the ship. You must prevent each alien from boarding, by firing the gun mounted in the airlock where the monster is lurking. You do this by pressing the key bearing the number of the doorway you want to clear out.

At higher difficulty levels, the aliens begin to realize that their friends are being blown to bits, so they don the spacesuits of dead humans—but the faceplates, belts and boots turn green. Eventually the ranks of aliens thin out and they occasionally let three humans enter the airlocks simultaneously.

However, if nine aliens succeed in boarding your spaceship, they'll (rather stupidly) enter the main reactor and destroy everything for the surrounding four or five miles.

### RUNNING YOUR BONUS

Frog (FROG.EXE), Reardoor (REARDOOR.EXE) and an instruction file covering both games are on this month's Antic Disk. These runtime programs *cannot* be played directly from the monthly disk menu. For complete loading instructions, choose selection 5 on the Main Menu of Side B and read the game HELP manual.

Your February 1988 Antic Disk—featuring all three ACTION! games in runtime as well as every program in this issue—will be shipped to you within 24 hours after receiving your order. Just phone Toll-Free to the Antic Disk Desk at (800) 234-7001. The monthly disk is only $5.95 (plus $2 for shipping and handling) on your Visa or MasterCard. Or mail a check for $5.95 (plus $2 shipping and handling) to Antic Disk Desk, 544 Second Street, San Francisco, CA 94107. ■

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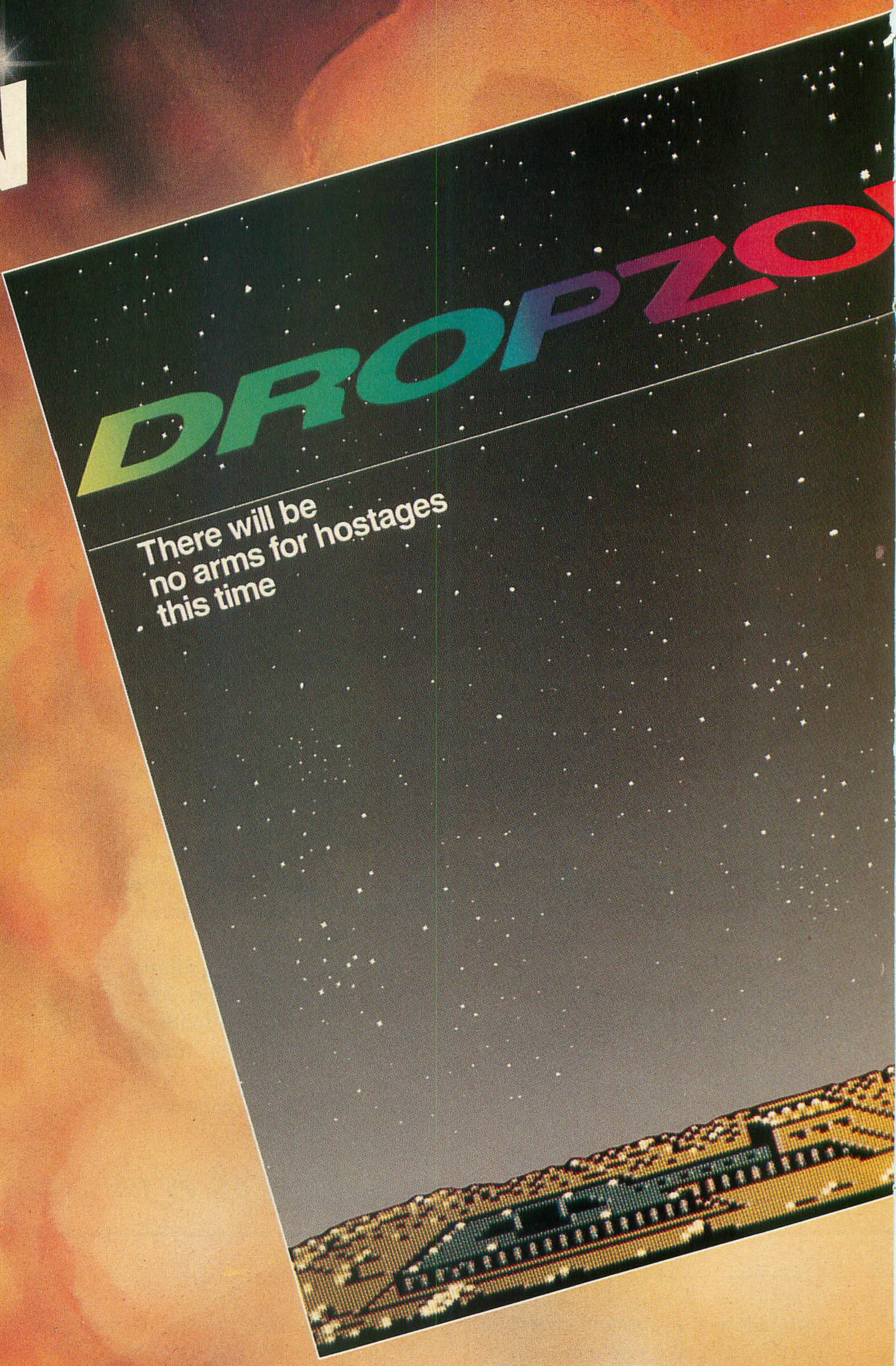
only allowed to move forward, so I checked to make sure that Delta X is equal to nothing but 1. If the old position was equal to its starting position, I allowed it to move an extra space—because Pawns can move two spaces on their first move.

If the Pawn's new position is on top of an opponent's piece, I allowed for a Delta Y movement of either 1 or −1. Combined with the Delta X, that would result in diagonal movement. Simple, really. It just took a bit of planning to work out the values for the special conditions of each chess piece. ■

*Greg "Maddog" Knauss of Rancho Palos Verdes, California is an indefatigable ACTION! language programmer.*

Listing on page 73

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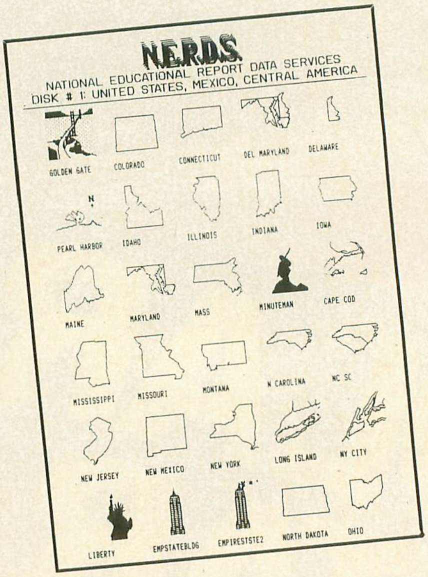
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Hi-Tech Expressions
1700 N.W. 65th Avenue, Suite 9
Plantation, FL 33313
(800) 848-9273
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$9.95 each, 64K disk
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N.E.R.D.S Software
18 Wendy Drive
Farmingville, NY 11738
Requires Print Shop
$8.95 each, $15 for both; 48K disk
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These two disks contain map icons for use with Broderbund Software's Print Shop. Write reports, using these graphics with colored pens for full-page illustrations. Each disk contains about 115 blank maps. Disk 1 consists of the United States, Mexico and Central; America. Disk 2 has maps of Europe, South America, Canada and the Mediterranean. Site Licensing for Users Groups and schools is available.

## MODS, FIXES & UPGRADES

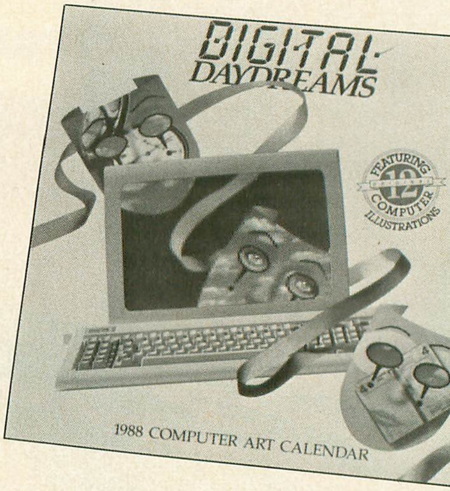
(technical booklet)
RUNES
P.O. Box 1982
Ames, IA 50010
(515) 232-1252
$2 (plus $1 for shipping)
CIRCLE **196** ON READER SERVICE CARD

**Mods, Fixes & Upgrades** is a compilation of hardware project articles collected by MAGIC (Midwest Atari Group—Iowa Chapter). Included are step-by-step memory upgrade and wiring instructions, as well as diagrams and and repair instructions for your keyboard or modem.

## WARP SPEED, VER. 7.10

(disk drive enhancement)
Happy Computers, Inc.
P.O. Box 1268
Morgan Hill, CA 95037
(408) 779-3830
$99.95—Hardware/software
$10—Software only
CIRCLE **192** ON READER SERVICE CARD

Atari 8-bit computers and IBM PC compatibles can now share text files, databases and higher-level language programs on floppy disk with the IBMXFR program, which is now part of Happy Computers' **Warp Speed Software**, Version 7.10 for the Atari 1050 drive. The IBM need not be there for the conversion.




## DIGITAL DAYDREAMS

(wall calendar)
Publishing Ink.
521 State Street
Glendale, CA 91203
(818) 500-7857
$10.95
CIRCLE **193** ON READER SERVICE CARD

The **Digital DayDreams** computer art wall calendar is 100% computer-generated, using current graphic and desktop publishing technology. It features artwork from several types of computer, including the Atari ST, and includes selections from a Symbolics computer animation system used for generating sophisticated television graphics.

continued on page 76

*By* JAMES HAGUE

# Current Events

*Most players can't take it for more than 45 seconds!*

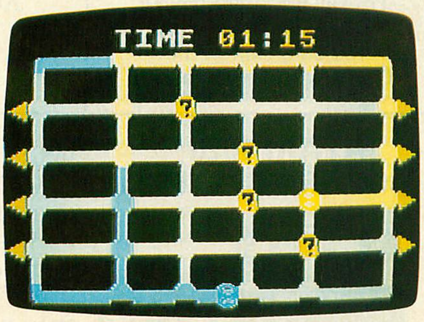
**Current Events is a two-player game that's likely to drive you crazy if you attempt to play a round lasting longer than 45 seconds. Do you have the guts to go a nonstop two minutes? This BASIC program works on all 8-bit Atari computers having at least 32K memory, disk or cassette.**

It's another Sunday night and a familiar episode is about to take place in the basement of the multi-billion-dollar corporation Ice Cubes International (famous for its line of monogrammed cubes). The two masterminds behind this highly successful conglomerate, Mikey and Chuckie, are once again having their weekly argument—Who gets to use the company computer system?

Soon enough, Mikey and Chuckie once again decide to solve their weekly disagreement in a logical manner. The two billionaires begin yanking circuits out of of their computer. The one who ends up with the majority of parts gets to use the machine, if he is able to put it back together.

## START CIRCUITING

Current Events is a two-player game that lets you and a friend simulate Sunday nights in the basement of Ice Cubes International. Type in Listing 1, CURRENT.BAS, check it with TYPO II and SAVE a copy.




If you have trouble typing in the special characters in lines 9025-9030, 9080-9100, 9120 and 9180-9186, don't type them in. Listing 2 will create them for you. Type Listing 2, check it with TYPO II and SAVE a copy. When you RUN Listing 2, it creates these hard-to-type lines and stores them in a file called LINES.LST.

To merge the two programs, disk users LOAD "D:CURRENT.BAS" and then ENTER "D:LINES.LST." Cassette

continued on next page

users: CLOAD Listing 1, then insert the separate cassette used for Listing 2 and ENTER "C:".

Remember to SAVE the completed program before you RUN it. Now you're ready to play. Plug a pair of joysticks into ports 1 and 2 and RUN the program.

When the title screen appears, press [SELECT] to choose the length of the game—from a fast-moving 15 seconds to a grueling two minutes. About 30 to 45 seconds seems to be as much as most players can stand. Press [START] to begin.

The main playfield is a white, grid-like circuit. Player 1 is a Blue Thing that starts in the lower left corner. Player 2 is a Yellow Thing that starts in the upper right corner. The object is to change more of the circuit to your color than your opponent does, before the timer reaches zero.

To move, push the joystick in the direction you want to go. Once you're in motion, you can't stop until you hit the edge of the circuit. And you cannot reverse your direction. Instead, you must go "around the block." As you move, you fill the circuit with a pulsating trail in your color. Anything you move over will change to your color, even if it's currently in your opponent's color.

The first complication is the transporters—red arrows on the left and right edges of the circuit. If you drive into an arrow, you'll be transported to the opposite side of the circuit and the transporter will disappear. There are only four of these, so use them wisely.

Second, when the two "Things" collide, each will be sent back to its starting corner—and started off again in a random direction!

## QUESTION BOXES

Finally, those red blocks branded with question marks are event boxes. They're positioned at random locations on the circuit. There are five at the start of the game, each of which affects the electricity in the circuit differently when hit—or, in other words, causes "Current Events."

Each box makes something different happen. But since the boxes all look alike, there's no way to tell which Current Event will be triggered until you ram a box. However, each event happens only once per game.

NULL BOX: Nothing happens. Surprised?

BLUE SPLATTERER: Explodes when hit, covering the surrounding area with blue. Great for player 1, but not for player 2. Note that the blue splatters more horizontally than vertically.

YELLOW SPLATTERER: Same thing, but splatters yellow instead.

POSITION SWITCHER: Instantly swaps not only the positions of both players, but their current directions as well. Needless to say, this could drop you into a far from ideal position. continued on page 24

# Page 6 Exchange *Type-In Software*

*by* ALLAN SHARPE

# Sierpinski Curves

*Fractal "arrowhead" power display*

**This short, interesting demonstration listing clearly shows the power of fractal mathematics to create complex, everchanging shapes. The BASIC program works on all 8-bit Atari computers of any memory size, with disk or cassette.**

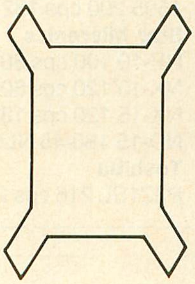
Sierpinski Curves is the second program published in **Antic** under our exchange agreement with Page 6, England's leading Atari magazine. (See *Graphics Impossible*, October 1987). Allan Sharpe of the Brighton Users Group sent this short, flashy demonstration of fractal mathematics to Page 6, where it appeared in the May/June 1987 issue.

"Fractals imitate nature," explained Charles Jackson in *Fractals for Your Atari* (**Antic**, April 1986). Fractal curves are "infinitely squiggly." They are used for studying shapes of natural formations such as snowflakes and honeycombs.

Mathematician Benoit Mandelbrot claims that Gustave Eiffel used formulas similar to the "Sierpinski Arrowhead" to design the Eiffel Tower. To check this out, type in Listing 1, CURVE.BAS, check it with TYPO II and SAVE a copy before you RUN it.

This impressive display of Sierpinski's curves follows a very simple "search-and-replace" rule:

1. We start with a shape that looks like this:



2. Search for all shapes that look like this:



continued on page 24

# When you want to talk Atari

## XL/XE HARDWARE

### INTERFACES

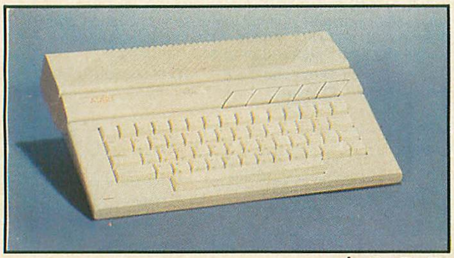
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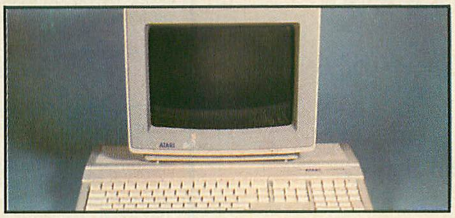
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## ST HARDWARE



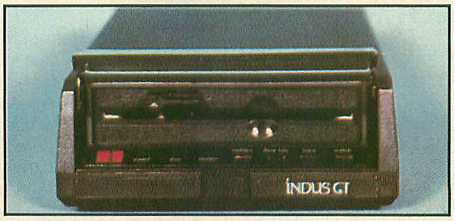
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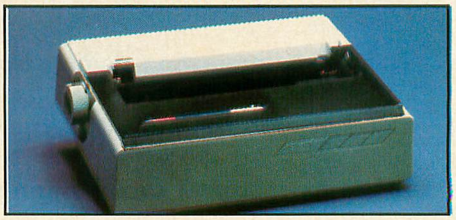

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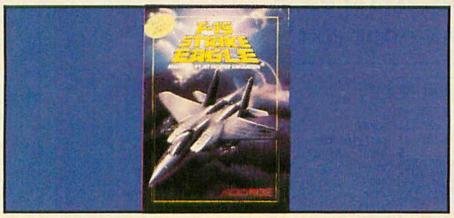
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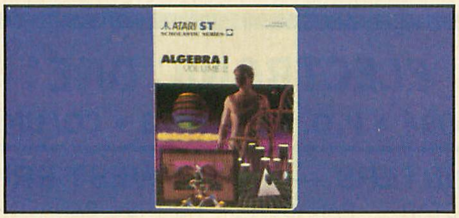

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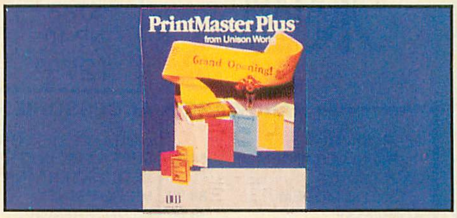



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Prices subject to change without notice. Send SASE for free price list. Atari is a reg. trademark of Atari Corp.

**CURRENT EVENTS**
continued from page 18

Disrupter: Ouch! Causes the entire circuit to short out for six seconds, during which it's impossible to determine the color of *anything*. You'd better be aware of what the entire circuit looks like at all times so you'll know what to do when the lights go out.

## STRATEGY

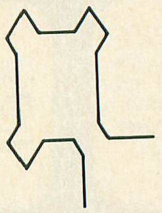
The simple goal of Current Events is to maximize the amount of circuitry covered with your color while minimizing the color territory of your opponent. Obviously, moving over either the untouched white circuit or your opponent's color is a lot better than repeating a path over your own color. Hitting an event box can be either good or bad. You'll just have to play the odds. In certain situations, even the disruptor can be beneficial—as can ramming your opponent. In short games, the event boxes can make or break you, while in a longer game you *may* have time to make up for your mistakes. ■

*James Hague is a Computer Science major at North Texas State University. He has published two impressively demented* ***Antic*** *games—the memorable* Uncle Henry's Nuclear Waste Dump *(December, 1986) and* Rockslide *(May, 1986) as well as the powerful* Rainbow Screen Customizer *utility (March, 1987).*

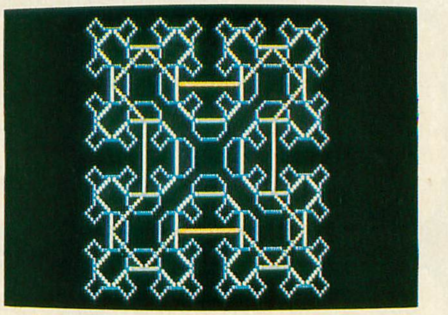
Listing on page 69

**SIERPINSKI CURVES**
continued from page 19

3. Replace each one with a shape that looks like this:



4. Return to Step 2 and apply our "search-and-replace" rule to all the new angles we just formed.

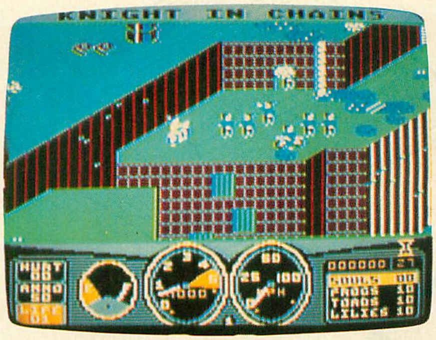


What you end up with is a fascinating color display in Graphics 7+16. The previously mentioned **Antic** article *Fractals for Your Atari* (April 1986) provides a detailed explanation of how to adjust mathematical formulas in your programs to obtain different visual effects. ■

Listing on page 65

# Arcade Delights

*Autoduel, Cycle Knight, Ace of Aces and Bop 'N Wrestle*




## CYCLE KNIGHT

**Cycle Knight** is a combination of Dungeons & Dragons and Easy Rider that puts you atop a medieval motorcycle on a mission to rescue the queen and her loyal subjects. Up to four players have fuel, ammunition, an old map, and several lillies, frogs and toads—considered tasty by the strange people you'll meet—plus three extra lives, in the form of birth certificates. You'll need those as you pass through 10 tough chambers in the castle.

Even the first chamber is no day under the boardwalk. You must "rescue" clamoring villagers—by running them over with your motorcycle. Then you must get past a serf. Don't run him down, you'll die. Just turn him into a toad with your ion bullets and *then* run over him.

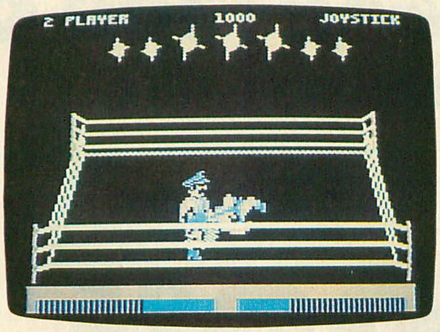
Attempts at an "Olde English" atmosphere don't help the game. Also, don't be surprised if half your deaths are due to unreasonable cycle response to reasonable joystick movement.

However, Cycle Knight's interesting language simulator lets you "click on" words with the joystick. For instance, to get a guard's attention, click on GUARD and TALK. Then offer him some toads by moving the pointer to the number indicator and pressing the trigger while moving the joystick up or down. He'll gulp down the toads and belch with delight. Then click on I WISH, PASS and TALK. He'll let you pass. You can talk to Serfs, Guards and Lords, or Wizards who look like members of Z Z Top. Each can be swayed with different gifts—and each is easily insulted.

Cycle Knight has interesting graphics and provides endless random variations. It does indeed have amusing aspects—but you're likely to be frustrated as well as being amused.—GREGG PEARLMAN

$29.95, 48K disk. Artworx Software, 1844 Penfield Road, Penfield, NY 14526. (312) 480-7667.

CIRCLE **196** ON READER SERVICE CARD




## BOP 'N WRESTLE

**Bop 'N Wrestle** is an unintentionally realistic simulation of professional wrestling—displaying clumsy, slow-moving figures in confusing action.

Your joystick-controlled wrestler, Gorgeous Greg, is supposed to have seven series of four movements each. Depending on the situation, pressing the button and moving the stick left could mean to either knee your opponent, clothesline him (smack with your extended forearm), "suplex" (forcefully invite your opponent to lie on the canvas), "reverse suplex" ("flip him up and over like a giant pendulum," says the manual) or elbow drop. Assault techniques also include propeller-spinning your opponent, kicking him in the stomach and stomping his head—all humorously described by the manual.

The main difficulty with Bop 'N Wrestle is simply getting Gorgeous Greg to cooperate with your joystick movements. The angled perspective of the "3-D" screen is misleading, and Gorgeous might just run right past his opponent instead of clobbering him as instructed. You might think that a situation calls for a body slam, only to find yourself simply grabbing your opponent, who will probably hug you back affectionately for a second or two before pinning you.

Your nine opponents include Lord Toff, the most dangerous wrestler alive today, Bad Barney Trouble, who lives to cause pain ("I love to hear them choking—it gives me a real buzz!"), and Molotov Mike, who regularly smashes blocks of ice with his head.—GREGG PEARLMAN

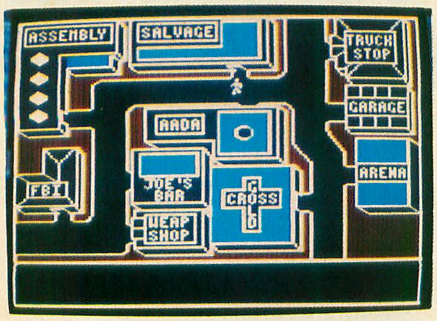
$29.95, 48K disk. Mindscape Inc., 3444 Dundee Road, Northbrook, IL 60062. (312) 480-7667.

CIRCLE **197** ON READER SERVICE CARD

## AUTODUEL

**Autoduel** caused me to skip meals (and consider skipping work) as I carried microchips and biohazards—determined to make deadlines and not be blown away by the toughest road warriors since Mad Max. While I battled the hordes of cars, motorcycles and killer vans, I was ever mindful that if successful, I might be called to help the FBI exterminate "Mr. Big," the sinister force behind the evil that ensnares the roads of the Northeast Corridor in the 21st century.

continued on page 28




Based on Steve Jackson's board game, Car Wars, Autoduel is a great implementation for the home computer. You start as a pedestrian with $2,000. Since success depends on having the biggest guns, you must first make enough money to put a deathmobile on the road. To do this, you can participate in a free "Amateur Night" at an arena, where you battle other amateurs in a stripped-down car. Putting them all out of commission earns you $1,500. If not, you must start from scratch. Since it's easy to die in the arena, you might try the casino in Atlantic City and play poker or blackjack.

Once you have some money, you can custom-design your car at the assembly plant. Because of the variety of vehicles you can build, the game has great replay value. But no matter what type of vehicle you build, your enemies have an uncanny ability to attack your weakest point.

As you win battles and deliver packages, your abilities and prestige will grow. You are rated on these as well as driving ability, marksmanship and mechanical skill. The higher your rating, and more lucrative your choice of assignments.

Autoduel isn't perfect. If you have only one drive, be prepared for a great deal of disk-swapping. The graphics and colors don't really take advantage of the Atari's superior abilities, but you'll know what or where things are.—JOE FRANCESE

$49.95, 48K disk. Origin Systems, distributed by Electronic Arts, 1820 Gateway Drive, San Mateo, CA 94404. (415) 571-7991.

CIRCLE **198** ON READER SERVICE CARD

## ACE OF ACES

**Ace of Aces** is excellent at giving you the feeling of being in the cockpit of a WWII fighter-bomber. Using joystick or keyboard you switch between front, side and bomb-bay views. Controls critical to flying the plane are located on side panels. Though Ace of Aces doesn't have the scenery graphics of other flight games, it gains points for the feeling of "being there" at the controls.

Scoring depends on how many enemy fighters and bombers, U-boats and trains you destroy. As you try to outposition and gun down the enemy, check on damage and adjust controls, you must switch between views of the engines and the forward, fighting view. This is an integral part of the game. World War II pilots didn't have heads-up displays, so neither do we. Warning bells sound when your plane sustains damage. To ignore warnings and the condition of your engines is to invite death in a ball of fire.

At the title screen, press the fire button for your briefing. Move the commander's pointer to choose a mission—dogfighting, bombing trains or U-boat bases, or shooting down bombers or V-1 rockets. Then select either mission or practice status. Once airborne, consult your map and head for the target. Before long you'll be attacked by an enemy fighter—either shoot him down or evade him. I highly recommend dogfighting practice.

Upon reaching your target, you'll have an arsenal of heavy bombs to drop. In attacking the U-boat base, speed is essential, because the subs start to submerge when they become aware of your attack. After unloading your bombs, the number of fighters challenging you will increase. Completing a mission is a real accomplishment.—JOHN MANOR ■

$29.95, 48K disk. Accolade, 20813 Stevens Creek Blvd. Cupertino, CA 95014. (408) 446-5757.

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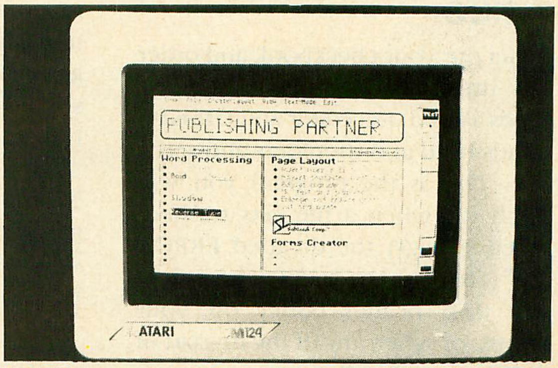
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# 8-Bit Enhancements

*Billboard, DISKIO and more . . .*

*Reviewed by* CHARLES CHERRY

## DISKIO

Get out your checkbook and order this program right now. Everyone needs a good disk editor and **DISKIO** stands head and shoulders above the rest. This is the program you will reach for when a file gets trashed, when you get the dreaded ERROR 164 (file number mismatch), when you drip peanut butter on your floppy, or when any of the myriad of disk horrors befalls you.

Do not confuse this product with **Antic**'s *DISKIO* (January 1985) and *DISKIO Plus* (December 1985). Those type-in programs are DOS extensions that make DOS friendlier and more powerful. Robert Gray's DISKIO is a disk repair and editing utility. And it is the best one I have ever seen.

DISKIO does all the normal repair, editing and copying functions. It displays sectors in Hexadecimal, ATASCII or screen codes. It supports normal, extended and double density. It also supports RAMdisks (DOS 2.5, MYDOS, Omnimon, Axlon, XE, expanded XL/XE), hard disks, and 8″ disks, including subdirectories. It automatically repairs ERROR 164s and rebuilds directories.

I could quibble over a couple of minor points, the disk map could be more informative, an automatic VTOC repair is missing, as is a sector copier. But, over all, DISKIO is reasonably complete and very easy to use. Even the documentation is pretty good, although if you're a novice, you should read the last half of the instructions before the first half.

$26, 48K disk. Robert Gray, 123 N. Summit, Little Rock, AR 72205. (501) 374-5400.

CIRCLE **201** ON READER SERVICE CARD

## ICX-85 KEYPAD

If you type a lot of numbers into your 8-bit Atari, this is for you. The **ICX-85** is a customized Atari CX85 numeric keypad. Arranged like a standard calculator keyboard, the discontinued CX85 boasts 17 keys—addition, subtraction, multiplication and division signs, numbers, decimal point, comma and [RETURN]. It even has a "home key" bump on the 5.

There have been several other third-party keypads like this, but they all require special software "handlers" that often clash with other programs. Innovative Concepts modified the CX85 keypad to be wired directly into your computer. The advatage is that the ICX-85 runs without a handler and works with any software.

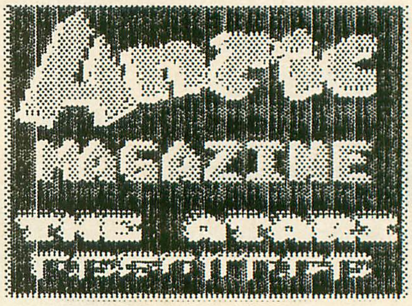
Installation requires soldering a dozen wires to the keyboard chips in your computer. It's not difficult, but some skill is required. You also must drill an exit hole for the cable. The cable comes with a plug so you can disconnect the keypad (although it still leaves the cable end hanging out).

If you already have a CX85, you can save $10 by sending it in with your order. For those with more skill than money, IC promises that the keypad modification in kit form should be available by the time you read this.

The ICX-85 is a winner. Even if you only use numbers to balance your checkbook, this keypad is well worth the money. By the way, if you have an Atari XL or XE computer, you should install IC's $15 Function Key Kit at the same time. It will give you 1200XL-style function keys.

$44.95 ($34.95 with your CX85). Innovative Concepts, 31172 Shawn Drive, Warren, MI 48093. (313)293-0730.

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## BILLBOARD

**Billboard** prints LARGE pictures. It also prints small pictures, but as the name suggests, it really shines when you start measuring results in feet instead of inches. While it doesn't manipulate pictures like Picture Plus or MagniPrint II+, the print quality is just as good and Billboard is easier to use. It will quickly become your favorite picture printer.

Billboard prints Graphics 7+ (15), Graphics 8 and Graphics 9 pictures in

a staggering array of sizes. Horizontal and vertical sizes are set independently so you can squash or stretch your pictures. Color pictures are printed using gray scale patterns. You decide which color gets which pattern.

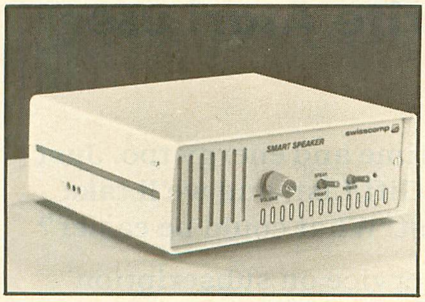
There seems to be no limit on the size of a printout. You can pause the printing to change ribbons or add paper. Billboard tells you how many pages and how long each printout will take. A 200-foot by 300-foot billboard, for instance, uses 131,712 sheets of paper and takes 260 days to print. I did not test this.

Billboard is written in BASIC and machine language, which makes it easy to modify. Although it only supports Epson FX-compatible printers, I changed the codes (with help from the documentation) to work with my Gemini 10X. I also changed the screen display to show print density in dots per inch instead of dots per line.

Billboard is shareware, which means you can try a copy free. If you like it and use it, send programmer Chris Wareham the $10 for the program—be honest with shareware so that this kind of worthwhile program can remain available to us all. Other shareware programs are available from CompuServe, GEnie, local BBS's and users groups.

$10, 48K disk. Chris Wareham, 1215 West Jackson, Spearfish, SD 57783.

CIRCLE **203** ON READER SERVICE CARD



## SMART SPEAKER

The **Smart Speaker** speech synthesizer translates text in your computer into words you can hear. It is a surprisingly large box (about 7 1/2×8 1/2×3 inches) that can hook up to any computer using either the Centronics parallel (printer) or RS-232 serial (modem) port. I tested it on a 130XE with an 850 interface and on a 1040ST.

Having both parallel and serial connectors makes Smart Speaker unusually flexible. Any software that can send text to a printer or a modem should be able to make it talk. However, the printer control codes my word processor sent made Smart Speaker choke. Instead of sliding over them silently or pronouncing gibberish, it just stopped. I had to turn it off to reset it.

Speech synthesis is very difficult. Words must be built up out of elementary sounds called phonemes, which must be reproduced accurately and strung together smoothly. Some provision must be made for punctuation marks. Pitch, volume and speed must vary to provide expression. Even if you produce a great-sounding system, you still have to deal with the idiosyncracies of the English language. You must teach it, for example, to recognize the differences in tough, cough, though and through.

Given the state of the art, no one would ever mistake a speech synthesizer for a real human voice. In fact, no one can honestly claim that their system is easy to understand. Nonetheless, there are differences, and some are better than others. Smart Speaker's speech quality does not rank particularly high. Both S.A.M. on the 8-bit, and "SPEAKTXT.TOS" on the ST are easier to understand—and they're just done with software.

Smart Speaker's problems begin with the phonemes. There is considerable background noise and the volume levels are uneven. The text to speech translation is not bad, but there is no phonetic language to improve it. You can intentionally misspell words (i.e., "nniife" for "knife"), but it requires a lot of experimentation.

All synthesizers become more understandable as you use them. Your brain learns the "accent" and makes the corrections for the system. I suppose that the Smart Speaker would become passable with frequent use.

The Smart Speaker hardware is well done. The system is convenient and easy to use. Let's hope that future revisions improve the intelligibility of the translation.

$229.95. Swisscomp Inc., 5312 56th Commerce Park Blvd., Tampa, FL 33610. (813) 628-0906

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## FONT CRAFT

**Font Craft** is yet another 8-bit character set editor. However, it's better than most. It permits six different fonts in memory (counting the normal one) and displays two of them at once. It can edit as many as six characters simultaneously and it has a scratch-pad screen for trying your fonts in various modes or experimenting with animation—which is limited to switching the five character sets.

The single-character display works well, but the multi-character display flickers annoyingly. It is two characters high by three wide, and it doesn't show a character completely surrounded as a 3×3 display would. Nevertheless, it is useful and the editing tools (such as Rotate and Flip) work on groups as well as individual characters.

Font Craft is generally easy to use. It can be operated either entirely with the joystick or with a combination of joystick and keyboard. It can store fonts as DATA statements for BASIC programs, or as data blocks for other languages. The documentation is adequate, but it's buried in awkward multi-screen HELP files. It would be better if you could print out all these screens.

Font Craft is a little rough around the edges. There are misspellings in the documentation—and even on the menus. The displays are not completely thought out, and the interface is uneven. But Font Craft is undeniably powerful. It's a worthwhile addition to the library of Atari character set utilities. $8, 48K disk. ■

Pinekraft Enterprises, P.O. Box 56002, Harwood Heights, IL 60656.

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# *MegAnimator*

## *Atari moviemaking was never easier*

*by JACOB DONHAM*

***MegAnimator is a versatile and easy-handling picture animation system that moves as many as 64 image frames in a single presentation.***

***This BASIC program works on 8-bit Atari computers with at least 48K memory and disk.***

Two of the Atari's most impressive features are character set redefining and page-flipping. MegAnimator combines both of these tools into a powerful, easy-to-use animation system.

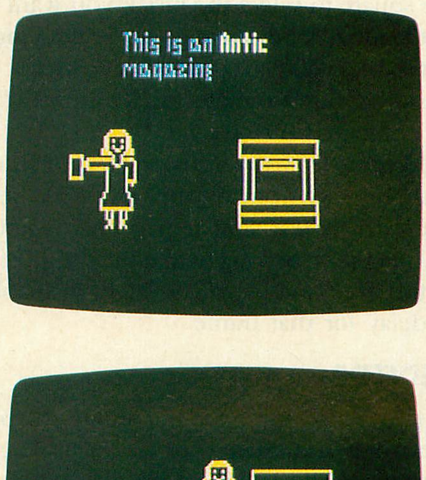
MegAnimator has five parts—Block Editor, Frame Editor, Movie Editor, Movie Player and the MegAnimator Main Menu. I wrote it this way so that I could use every bit of memory available. Because any movie requires many frames to simulate motion, moving computer graphics gobbles up available RAM at an alarming rate. If you RUN the Movie Player, then press [BREAK] and type PRINT FRE(0), you will probably see that less than 100 bytes of memory remain in an 800XL. The rest is taken up by the movie.

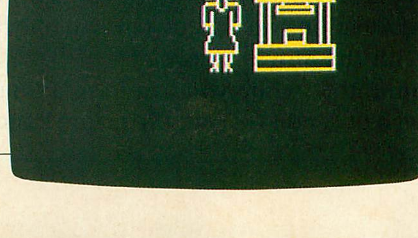
### GETTING STARTED

To take your best shot at becoming the next Walt Disney, type in Listing 1, MOVPL.BAS; Listing 2, BLKED.BAS; Listing 3, FRMED.BAS; Listing 4, MOVED.BAS and Listing 5, MEGMATOR.BAS. Check them all with TYPO II and SAVE a separate copy of each. The movie files created by these programs are around 132 sectors each, so it's handy to leave that much room available on your MegAnimator program disks.

To create a movie with MegAnimator, RUN MEGMATOR.BAS. This menu program will let you access all of the other programs. First, use the Block Editor to create one or more sets of blocks. Next, use the Frame Editor to draw as many as 104 frames of animation with the basic building blocks you just created with the Block Editor. Third, put them all together and create the actual movie with the Movie Editor. The Movie Editor requests filenames of your block sets and frames, then combines that information into a master control file. Finally, the Movie Player loads and displays your completed

continued on next page



masterpiece.

DISK OWNERS: A MegAnimator demonstration movie is on your February disk. (Type-in BASIC listings of a full-scale MegAnimator cartoon would be far too long to print in the magazine.) To view the movie, select the Movie Player from the Main Menu and at the prompt, type ANTIC.

## BLOCK EDITOR

The Block Editor is used to Edit, Load, or Save a set-up of Blocks. Selecting the Edit Block option brings up another menu with a box next to it. The cursor square in the upper left-hand corner of the screen can be moved with the joystick to choose one of 64 blocks you can edit. (You can't see the blocks because you haven't put anything in them yet.)

Press the joystick button over a chosen block and it will appear in the box, enlarged and with a small plus in the upper left-hand corner. Move the plus around with the joystick and add or remove a dot by pressing the button.

Now you can press any of the numbers displayed, and that option will be executed. They're rather self-explanatory—Scroll Up means moving upward. The only obscure choice, Reverse Block, turns all *on* pixels off, and all *off* pixels on. The [RETURN] key brings you back to the Main Menu.

When loading and saving block sets, you don't need to type the drive number or an extender when prompted for a filename. The program automatically puts these in for you, saving the set with an extender of .SET.

## FRAME EDITOR

Option 4 of the Frame Editor menu, Load Block Set, shows what your frames will look like. The Edit Frames option takes you to another new menu with six choices. You will see the cursor square in the upper left-hand corner. If you load a block set you created, it will show up here.

Move the square to select the block you want to draw with. Press the joystick button to go to the drawing screen. The current frame is displayed next to the menu. You can change to another frame by selecting Option 1. There are 64 frames, numbered 0 to 63.

Other selections let you choose which of four colors to draw with, or copy from another frame to the current frame so you can repeat similar parts of a picture. The Parameters function lets you change the frame settings—which include four sound voices, eight available block sets and a delay for that frame.

## MOVIE EDITOR

Now all that keeps you from becoming the next Walt Disney is learning to animate your creations. Luckily, this is the easiest part. The Movie Editor asks you for all the necessary information and creates a movie file, ready for displaying with the Movie Player.

Keep in mind that while you can have a total of 104 frames, you can only edit 64 with the Frame Editor. If you specify more than 64 frames, the Movie Editor asks you for a second filename for the remaining frames. As stated above, you may have as many as eight block sets. If you ask for a block set in Parameters that you haven't loaded with the Movie Editor, you will be shown the place in the sequence memory where it should be. Usually this is blank, but sometimes it contains garbage. If you want a blank block set, just save an empty one.

## MOVIE PLAYER

Finally, select Movie Player and type in the filename for your movie file. The file title you specified will be displayed as the various frames and block sets are loaded, and your movie will run.

## PROGRAM NOTES

Two machine-language routines are used—a display list interrupt routine, and a block memory SAVEr/LOADer that calls CIO. Because they both reside in the first bytes of Page 6, there is a lot of awkward switching in the SAVE/LOAD routines to ensure that the proper code is there when the DLI is needed.

Everyone seems to have a pet method for clearing out memory, such as resetting the string pointer and clearing the string, or using a machine language routine. I simply tell the computer to write to the area I wanted cleared (via locations 88 and 89) and PRINT a CHR$(125). This puts the computer's built-in routines to good use.

Lines 1650-1658 are a subroutine that, given IN and BT, converts IN to a binary representation, inverts the bit specified by BT, converts it back to decimal and places the result in OT. I first tried BASIC's slow exponent operator, then I created my own routine to find, for example, 2^ x. Finally I created an array called PW, which contains powers of two and is many times faster than the exponentiation function.

## FILE FORMATS

The Block Editor saves a block set directly from memory as a five-sector, 512-byte file. Although these files probably couldn't be loaded by other character editors because they don't contain the second half of the set, the Block Editor has no trouble loading files created by other editors. Just remember to use only the first 64 characters.

The Frame Editor saves all 64 pages (one frame per page) from 96 to 160 at the top of memory. In each page, bytes 0-239 are the screen, 240-243 are sound voices 0-3, 248 is the block set, and 249 is the delay in jiffies (1/60 of a sceond). The unused bytes from 244-247 were supposed to contain color register values, but I ran out of XL memory in Movie Player, so I couldn't implement it.

The Movie Editor creates a very simple file consisting of all the information you provide, in ATASCII format.■

---

*Jacob Donham is from San Rafael, California. He wrote MegAnimator during a two-week period when he should have been studying for high school finals.*

Listing on page 66

**These two short subroutines can increase the speed of most Atari BASIC programs by 10% to 80%. Designed for intermediate BASIC programmers, Fast-Stack and Fast-Jump speed up access for GOSUBs and FOR/NEXT loops. The BASIC programs work on 8-bit Atari XL/XE computers with at least 48K memory. They can use disk or cassette, but do not run with cartridge BASIC.**

# Fast-Stack and Fast-Jump

## *40% faster BASIC for you*

by BILL BODENSTEIN

Atari 8-bit BASIC is dependable, versatile and friendly—but it's not fast.

Consider this example of how Atari BASIC trades speed for safety: You press [BREAK] to stop a program, change a few lines and then resume the edited program with a CONT or GOTO statement. With most other programming languages, this could lead to disaster because of the way those languages use their runtime stack.

Immediately before execution of a GOSUB (subroutine call), the runtime stack stores information needed to return from that subroutine. When Atari BASIC encounters a RETURN statement, it can tell which line to return to by pulling the line number of the previous GOSUB statement from the top of the runtime stack. The same process is used to find the line number of the FOR referenced by a NEXT statement.

But after Atari BASIC knows the line number, it still must search through the *entire* BASIC program, starting from the first line, until it finds the selected line. Unlike most other languages, Atari BASIC doesn't just jump to an address removed from the stack. Rather, it locates the proper return address safely—but slowly.

However, Fast-Stack gives you a way to trade some safety for speed. This one-line machine language program is activated by a USR call. Fast-Stack copies BASIC ROM to BASIC RAM, then modifies BASIC so that the runtime stack uses the return line *memory address*, instead of the return line *number*.

Fast-Stack should increase your BASIC program speed

continued on next page

10% to as much as 40%, depending on the program size and how far down in the program you placed the most frequently used GOSUBs and FOR/NEXT loops.

## SOME CAUTIONS

To prevent jumping to the wrong address after editing lines, the modified BASIC in RAM will only be active while the program is RUNning. ROM-based BASIC is turned on again at the READY prompt.

However, because stopping the program will not clear the runtime stack, re-entering the program from the subroutine level could cause Error 15—GOSUB or FOR line deleted. That's because BASIC ROM treats the *address* of the line taken from the stack as the line number itself. Therefore, use Fast-Stack only with your finished BASIC programs. If you need to edit a program containing Fast-Stack, return to the edited program with a RUN command instead of GOTO or CONT.

You may need to change the number of iterations in any DELAY loop your BASIC programs. Better yet, use the internal real-time clock (memory locations 18-20) so that delays will always be the same with either XL or XE systems.

The Fast-Stack version of BASIC RAM will remain active in a BASIC program loaded and RUN from a RUN "D:filename" or RUN "C:" statement embedded in *another* BASIC program. If you want the second program to RUN at normal speed, add POKE 54017,253 to its first line to turn on ROM-based BASIC. POKE 54017,255 turns on your modified BASIC again. Be sure to type a CLR statement before using either of these POKEs.

## II: FAST-JUMP

Fast-Jump also modifies Atari BASIC in RAM, but this routine speeds up the routine that searches for a matching line number.

Let's say that in a 500-line program, line 400 contains the statement GOTO 402. Upon encountering this GOTO, unmodified BASIC will automatically start at your program's first line and search—for a fairly long time—until it finds line 402.

Fast-Jump's line-searcher routine does things in a speedier way. It compares the current line with the line being referenced. If the referenced line follows or *is* the current line, BASIC begins searching from the current line, not at the start of the program. In our previous example, BASIC, modified by Fast-Jump, will begin searching at line 400—and discover line 402 very quickly.

## HOW IT WORKS

Whenever unmodified BASIC encounters a GOTO or GOSUB, it converts the number, variable, or expression that follows the statement into a two-byte integer. BASIC then starts at the first line of the program and compares this two-byte number with the two-byte line number that precedes each tokenized BASIC line. When a match is found, the address of that line is returned in STMCUR, the current BASIC statement pointer (locations 138 and 139), and execution begins from this new line. If no match is found, an ERROR 12 (Line Not Found) is generated.

In a 10-to-30-line program, execution time can be reduced 10% with each GOTO, GOSUB or READ if the line being referenced (or containing DATA) immediately follows or *is* the line containing that statement. In programs over 500 lines, some line-referencing statements RUN more than 80% faster.

To achieve the greatest speed improvements, try putting the subroutines immediately below the lines that call them. With Fast-Jump, you needn't cram them all at the start of your program for faster execution. Instead, in those first lines, place only the subroutines called throughout the program.

## FINER POINTS

It's good Fast-Jump practice not to backwards-reference your subroutines. Instead of these lines:

```
1000 IF Z*X>10 THEN 2000
1010 X=X+1:IF X<10 THEN 1000
```

try this one:

```
1000 ON Z*X>10 GOTO 2000:X=X+1:IF X<10 THEN
1000
```

If (Z*X) is *not* greater than 10, execution is tranferred to the next *statement*—not the next *line*, as with IF-THEN conditions. (A FOR/NEXT loop may also work, using the speed benefits of Fast-Stack.)

One problem with Fast-Jump is that it occupies the area of Atari BASIC code that handles the NEW command, so NEW does nothing. To erase the BASIC program, change any NEW statement in your program to POKE 202,1:END. In direct mode NEW works fine, because Fast-Stack re-enables BASIC ROM when exiting the program.

## TYPING THEM IN

Type in Listing 1, FASTPROG.BAS, check it with TYPO II and SAVE it to disk or cassette. When RUN, FASTPROG.BAS creates a file called FASTPROG.LST which contains *both* the Fast-Jump and Fast-Stack routines.

Listing 2 and Listing 3 are the MAC/65 source code for Fast-Stack and Fast-Jump, respectively. You do not need to type them in order to use the program. Antic Disk Owners will find all three listings on the monthly disk.

To merge these two routines with your BASIC program, simply ENTER the FASTPROG.LST file from disk or cassette. NOTE: the routines occupy lines 0 and 1, so be sure your own BASIC program leaves these lines free.

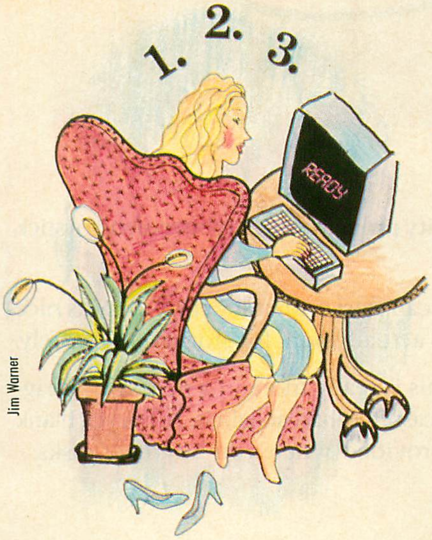
Though Fast-Stack and Fast-Jump work independently, you'll need both USR calls, because the machine language routine in line 0 is also responsible for copying BASIC into memory. ■

---

*Bill Bodenstein is a computer science senior at the University of Cincinnati. Readers rated his* Multi-Autorun *the most popular program in our March, 1987 issue.*

Listing on page 71

# *First-Time Atari Users Handbook*




Jim Warner

## *What to do after you unpack the box*

*By Gregg Pearlman, Antic Assistant Editor*

You just bought your first personal computer. You didn't want to spend a lot of money, and your eyes lit up when you saw the Atari 130XE in the store doing the same things as the brands that cost so much more.

Your start-up 130XE computer system requires a disk drive—an Atari 1050 is a reliable and widely available choice. A video monitor would be nice, but for now your backup television set will suffice. And you decided to put off buying additional peripherals—such as a printer or a modem—until after you learn the fundamentals of operating your new computer.

## UNPACKING

Here's what you'll see when you open your two Atari packages:

1. Atari 130XE computer: It looks like a typewriter keyboard, but all the microchip brains are inside. *continued on next page*

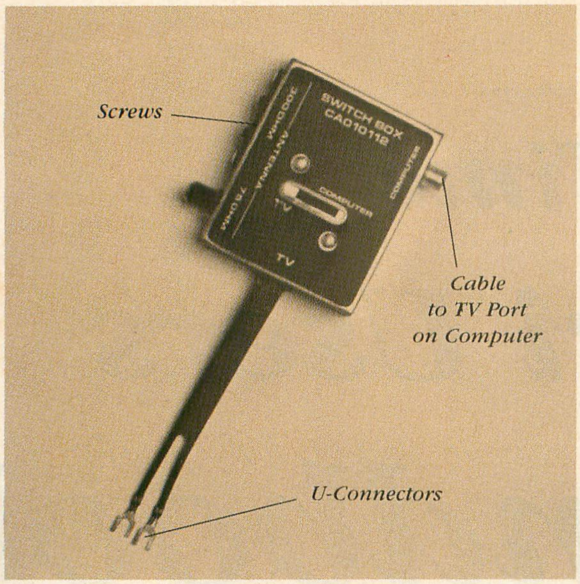



*Figure 1*

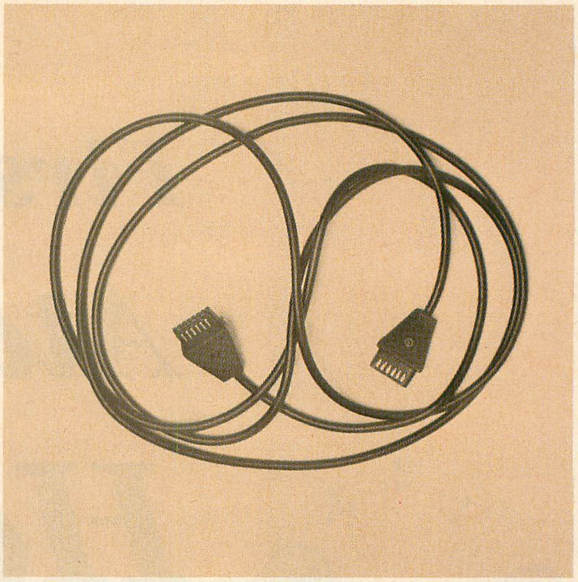


*Figure 2*

2. Computer power supply: A small, heavy box with two electrical cords attached to it.

3. Television switchbox and cable: Connects your television set to the computer.

4. Atari 1050 disk drive.

5. DOS 2.5 disk: DOS is the abbreviation for disk operating system.

(If you buy another brand of disk drive such as Astra, you'll want to get a copy of DOS 2.5 or 2.0 from an Atari users group, or from the monthly Antic Disk, or from Atari customer service. You also want to obtain DOS 2.5 or 2.0 if your system came with the incompatible DOS 3.)

6. Disk drive power supply: A bit smaller than the computer power supply, but otherwise not much different

8. Serial cable: Thick cable with ends that look alike. Connects the disk drive to the computer.

9. Various booklets and manuals that you may have trouble understanding at first.

At home, you'll need the following:

1. Electrical outlets (or extensions) for the television and two power supplies.

2. Blank floppy disks: They're inexpensive and normally sold in packages of 10.

Other useful options:

1. Video monitor: If you use a high-resolution monitor instead of a standard television set, you'll need to connect it to the computer via a monitor cable from an electronics store.

2. Power strip: Usually these have six electrical outlets, a surge protector, and an on/off switch.

3. Joystick: Not just for games—some word processors and other productivity programs allow convenient joystick operation too.

4. Disk box: You can start with a shoebox, but it's nice to have a box that is actually built for storing disks safely.

5. Disk labels: This is really more of a necessity, imagine if all your music cassettes had no labels. However, blank labels are usually provided when you buy new disks.

## HOOKING UP

1. Carefully remove all your equipment from the boxes and put it on a table or desk. Make sure nothing from the above list is missing.

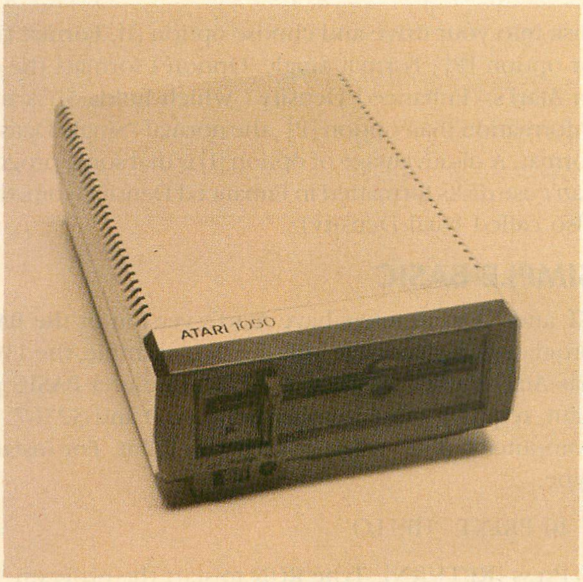
2. Make sure your computer is off. The on/off switch is in back, at the left end. Plug the computer power supply cord's jack into the POWER port on the back of the computer. Plug the other cord into an electrical outlet.

3. Hook the TV switchbox U-connectors to the VHF antenna screws on your TV. Hook the incoming antenna's U-connectors to the screws on the *switchbox*. (See *Figure 1.*) If your TV does not have these screws, you can buy adaptors at Radio Shack or other electronics stores.

4. Plug one end of the switchbox cable into the port in the TV box and plug the other end into the TELEVISION port on the back of the computer—right next to the CHANNEL switch. Make sure the TV is plugged into a power outlet. (NOTE: You only need the TV switchbox if you are using a television set. Video monitors, as explained previously, require different cables that connect to the MONITOR port on the back of the computer.)

5. Push the computer's CHANNEL switch to either 2 or 3—whichever TV channel does *not* transmit in your area. You'll tune your TV to the same channel.

6. Carefully remove any protective cardboard or disks from the slot in front of the disk drive. Plug one disk drive




Photography by Mary Rhomberg Pelaquin

*Figure 3*

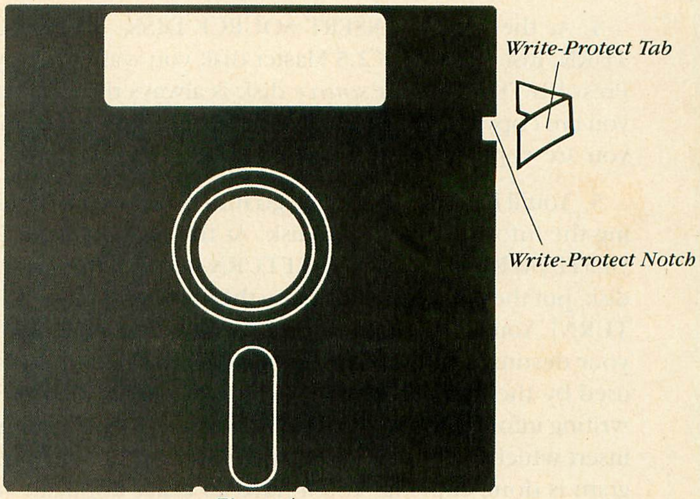



*Figure 4*

power supply cord into the POWER port on the back of the disk drive. Plug the other cord into an electrical outlet.

7. Plug one end of the black serial cable (*Figure 2*) into one of the two I/O CONNECTORS ports on the back of the disk drive. Plug the other end into the PERIPHERAL port on the back of the computer.

8. On the back of the 1050 disk drive, push both DRIVE SELECT switches to the left. This tells the computer that this particular disk drive is "drive 1." (If your drive is not an Atari 1050, check the manual for correct settings.) Later on, you may wish to "piggyback" additional disk drives by connecting them to each other via additional Atari-compatible serial cables.

## TURNING IT ON

1. Make sure your computer is turned off. The on/off switch is in back, next to the POWER port. Turn on your TV. Move the TV/COMPUTER switch on the switchbox to COMPUTER. Tune the TV to whichever channel the computer's channel switch is on—either channel 2 or 3.

2. Turn on the disk drive switch. The lower of the two red lights is the power light, which should now go on. You'll hear some clicking and whirring while the other red light, the busy light, goes on. Wait until the busy light goes off.

3. Take the DOS 2.5 Master Disk out of its protective sleeve. Holding the top of the disk, put it into the drive, label side up. Push it in until it clicks. (Never touch the magnetic disk material itself, only the paper packaging.) Flip down the door (retainer arm). (See *Figure 3*.)

4. Finally, turn on the computer. This is always the last step in the process. (That on/off switch is in back, on the left.) On a color TV set, the screen will turn blue. The disk drive noises and busy light will go into action again. If you have the volume turned up, you'll hear rapid beeping. This is the sound of DOS 2.5 being loaded into the computer.

5. When the word READY appears on the screen, you know you've done everything right up to this point.

However, if you made a mistake in booting up (starting) your computer system, you will see your first BOOT ERROR message flashing on the screen. Re-read the previous instructions and try again.

Always remove your disk before turning the drive on or off. If you see the SELF-TEST screen, double-check the cables leading to the disk drive.

## DISK OPERATION

For your first disk operation, you'll duplicate your DOS disk onto a blank disk.

1. From the READY prompt, type DOS—and then press the [RETURN] key. In fact, you might as well get used to pressing the [RETURN] key after every DOS and BASIC command, even if it is not specified in the instructions.

The disk drive whirrs and turns on the busy light again, bringing up the DOS 2.5 menu.

DISK OPERATING SYSTEM II VERSION 2.5
COPYRIGHT 1984 ATARI CORP.

| | |
|---|---|
| A. DISK DIRECTORY | I. FORMAT DISK |
| B. RUN CARTRIDGE | J. DUPLICATE DISK |
| C. COPY FILE | K. BINARY SAVE |
| D. DELETE FILE(S) | L. BINARY LOAD |
| E. RENAME FILE | M. RUN AT ADDRESS |
| F. LOCK FILE | N. CREATE MEM.SAV |
| G. UNLOCK FILE | O. DUPLICATE FILE |
| H. WRITE DOS FILES | P. FORMAT SINGLE |

SELECT ITEM OR RETURN FOR MENU

2. Press [J] on the DOS 2.5 menu—and don't forget to press [RETURN] afterward.

continued on next page

3. When the menu says DUP DISK—SOURCE, DEST DRIVES, type 1,1 and press [RETURN].

4. At the prompt INSERT SOURCE DISK, TYPE RETURN, insert the DOS 2.5 Master disk you want to copy. Press [RETURN]. Your *source* disk is always the original you are copying *from*—your *destination* disk is the one you are copying information *to*.

5. You'll hear the disk drive go into action again, reading the information on the disk. At the prompt INSERT DESTINATION DISK, TYPE RETURN, remove the source disk, put the destination disk into the drive, and press [RETURN]. You'll hear 40 loud clicks, then 40 quiet clicks—your destination disk is being "formatted" (set up to be used by the computer). Then you'll hear the computer writing information to the disk. At any onscreen prompts, insert whichever disk you're told to insert. When the program is done copying, you'll have an exact duplicate of your DOS 2.5 Master Disk.

6. Put your DOS 2.5 Master Disk back into its protective sleeve and put it in a safe place. Use the copy as your main DOS disk. If your copy ever gets damaged, just use your master disk to make a fresh copy.

## FILE PROTECTION

To see a directory of the files on a disk, choose option [A], Disk Directory, and press [RETURN] twice. When you're done reading the directory, press [RETURN] to go back to the DOS menu.

Sometimes, after copying a disk this way, you'll want to make sure the information can't be changed or erased. There are several ways to do this:

From the DOS menu you can choose option [F], Lock File, for each file you want protected. You can tell that a file is locked, if the filename in the directory is preceded by an asterisk (*). To unlock a file, choose DOS option [G].

Lock File prevents anyone from changing or erasing that file. But if you accidentally format the whole disk, you're out of luck. To prevent formatting or deleting of *any* kind, you can put a "write-protect tab" on the disk notch. (See *Figure 4*.) Write-protect tabs look like small, narrow pieces of colored tape, and they're usually included with new disks.

## DISK FORMATTING

If you put an unformatted disk into your drive, the drive will make strange noises and the screen will display an error number. Think of your disk as an electronic blank wall. You can't keep electronic books on that wall without electronic shelves.

The computer looks for information arranged neatly on the electronic shelves. Atari 8-bit computers use"soft-sector" disks, which must be formatted into 40 circular "tracks" of 18 sectors each. Formatting doesn't only set up a disk for use, it completely *erases* all previous information stored on the disk. In effect, formatting creates a fresh disk.

So, with the DOS 2.5 menu on the screen, put a blank disk into your drive and choose option [I], Format Disk, or option [P], Format Single. Option I formats the disk in Atari's "Enhanced Density" which holds 50% more information than option [P], the normal "Single Density" format. A disadvantage of option [I] is that some programs can't use disks formatted in Enhanced Density (sometimes also called Dual Density).

## SIMPLE BASIC

XL and XE computers have Atari's version of the BASIC programming language built in. (For example, the 130XE has Atari BASIC, Revision C.) Each line of a BASIC program requires a line number between 0 and 32767. The computer will do *exactly* what you tell it. For instance, type:

```
10 PRINT "HELLO"
```

Press [RETURN]. Type RUN to start the program. The computer will indeed print HELLO on the screen. However, if you type:

```
10 PRIMT "HELLO"
```

and press [RETURN], you'll see an error number on the screen. As they say, garbage in, garbage out.

Believe it or not, 10 PRINT "HELLO" is a program. Here's another program for you to type:

```
10 PRINT "TYPE A NUMBER"
20 INPUT A
30 PRINT "TYPE ANOTHER ONE"
40 INPUT B
50 PRINT "YOU TYPED"
60 PRINT A
70 PRINT "AND"
80 PRINT B
90 END
```

Type RUN and the program will begin operating. At the question mark (?) prompt, type any number and press [RETURN]. Almost immediately the program will print that number to the screen.

If you want to see what your program looks like, first make sure the program isn't actually running. (If it is running, press the [BREAK] key.) Type LIST and the program lines will be LISTed on the screen.

If you want to keep that program and use it later, you must SAVE it on a disk. First, think of a file name of no more than eight characters, like FILENAME. File names must be alphanumeric—no special characters (#, %, etc., or punctuation marks like commas or spaces) are allowed. Also, filenames may not use lowercase letters, or begin with numbers. You can also include a three-character "extender." So you could call this file FILENAME.123, or FIRST.BAS, or even HENRY.

Type SAVE "D:FILENAME.123" (be sure to include those quotation marks at each end) and press [RETURN]. The disk drive will start and soon your program is SAVEd on the disk. The "D: stands for disk drive. If you have more than one drive, you'd use "D1:, "D2:, etc.

Just for fun, press [SHIFT] [CLEAR], which clears your screen. Now type NEW and press [RETURN]. The NEW command erases FILENAME.123 from the computer's memory, but not from the disk where you SAVEd it. To get your program back, type LOAD "D:FILENAME.123" and press [RETURN]. When READY reappears on the screen, you know your program has been loaded. To check it, just type LIST.

What if you want to RUN Diamond Dave,some issue's Game of the Month? First, type DOS. The disk drive will start spinning again, and the DOS 2.5 menu will appear. Remove the DOS disk, put the Antic Monthly Disk into the drive and choose option [A], Disk Directory, then press [RETURN]. At the prompt DIRECTORY—SEARCH SPEC,LIST FILE, just press [RETURN] twice. The resulting disk directory shows a file called DIMNDDAVE.BAS.

Choose option [B], Run Cartridge, which returns you to BASIC. (BASIC is built into the 130XE, but not into the earlier Atari 800 or 1200XL—users of either computer needed to install a BASIC *cartridge*. Thus RUN CARTRIDGE returns you to BASIC on the 130XE despite the absence of an actual cartridge.)

When you see the familiar READY, type LOAD "D:DIMNDDAVE.BAS" and you'll get another READY. Now type RUN—you're playing the game of the month. In fact, you can even LOAD and RUN the game in one fell swoop by typing RUN "D:DIMNDDAVE.BAS".

If you're not interested in games, there's plenty of serious software on the market: word processors, spreadsheets, databases, graphic art, music. (Software and programs mean the same thing.) However, most commercial software is not written in BASIC, because other programming languages are faster and require less memory.

If you have a piece of commercial software—say, a word processor—turn off your computer, remove any disk from your disk drive and insert the word processor disk. Now, *hold down the [OPTION] key* and turn on your computer. The program will proceed to load and run automatically. Holding down [OPTION] turns off BASIC and lets the computer run programs written in another programming language.

## OTHER DOS FUNCTIONS

With option [C], you can copy a file to another disk (if you have another drive), to another filename on the same disk, to the printer, the screen or the editor—which is almost the same as copying to the screen.

Option [D] lets you delete any, all or selected files (except locked files) from a disk.

Option [E], renaming files, is especially important when you have several versions of a file. Let's say that on July 4 you wrote up a short program, CHRCOUNT, to count the characters in a file. On July 10 you make some minor changes and instead of just writing the file back to CHRCOUNT, you call it CHRCOUNT.710 (the extender is that current date). If you want to add a date on the original CHRCOUNT, choose option [E] from the DOS menu. At the prompt RENAME—GIVE OLD NAME, NEW, type D:CHRCOUNT, CHRCOUNT.704—and press [RETURN].

Options [K], [L] and [M] are for machine language files, so you can learn about them later on.

If you use option [N], create MEM.SAV, you can go to DOS from BASIC, perform whatever DOS functions you need and return to BASIC. Your BASIC program will still be in memory. If you don't have a MEM.SAVE file, your program is erased from memory every time you use DOS.

Duplicate file, option [O], is like option [C], except that [O] lets you switch disks in a single disk drive. At the prompt NAME OF FILE TO MOVE?, type the name of the file to be copied. Then insert source or destination disks as instructed by the onscreen prompts. ■

## RECOMMENDED READING

The following sources will be very helpful as you learn how to use your Atari:

*Your Atari Computer* by Lon Poole. Osborne/McGraw-Hill, 2600 Tenth Street, Berkeley, CA 94710. (415) 548-2805. $17.95, 474 pages.

*Mapping the Atari* by Ian Chadwick. Compute! Publications, Inc. (ABC), 825 Seventh Avenue, New York, NY 10019. (212) 887-5928. $16.95, 272 pages.

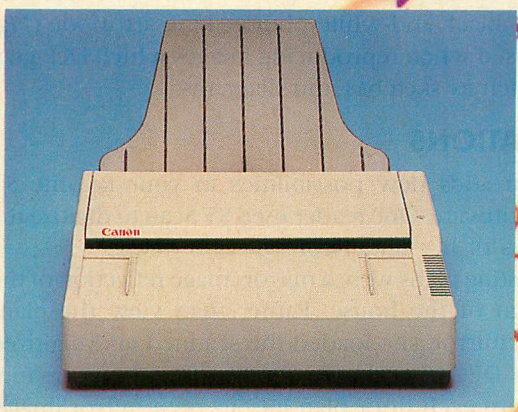
*Atari BASIC* (XL edition) by Albrecht, Finkel and Brown. John Wiley and Sons, 1530 South Redwood Road, Salt Lake City, UT 84104. (801) 972-5828. $16.95, 388 pages.


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(AS FAR AS WE KNOW.)

# ST Resource

All the latest news for the ST user

February 1988




Pat Johnson

# *ST Picture Scanning Arrives*

## *Reviewing Navarone's ST Scan*

*by Charles Jackson, Antic Technical Editor*

Navarone's **ST Scan** Image Scanner ($1,239) package vastly expands the versatility of your Atari ST's graphics and animation capabilities, bringing real-world images onto your computer screen. It's the perfect add-on tool for desktop publishers and laser printer users.

The scanner will digitize a full page of almost any type of artwork hardcopies in less than 20 seconds. It produces remarkably sharp and crisp black-and-white screen images at resolutions ranging from 75 to as high as 300 dots per inch (dpi) and in 32 gray shades. The system works with either monochrome or color monitors. Final images may be saved as DEGAS pictures, in GEM ".IMG" format, or as PostScript files.

ST Scan's hardware consists of a Canon IX-12 Image Scanner with Navarone's customized high-speed ST cartridge interface and a heavy four-foot cable connecting *continued on next page*



*FIGURE 1* Halftone Mode

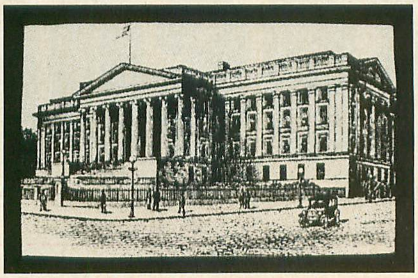

*FIGURE 2* Line Art Mode



*FIGURE 3* Combination

the two. The L-shaped interface is smaller than a paperback novel and plugs into the ST's cartridge slot.

The Canon IX-12 scanner is about half the size of a standard dot-matrix printer (13 1/2×11 1/2 inches), but requires an additional 11 inches behind it for convenient paper-feeding and to prevent overheating. It can accommodate pages as large as 8 1/4×16 1/2 inches and has an adjustable feeder tray to keep your original artwork from twisting and sliding.

## SCANNER SOFTWARE

The software for ST Scan is menu-driven for effortless operation and contains enough features to keep you pleasantly occupied exploring new possibilities with your scanner for days.

Scanning a photo is quick, easy and fun. Slide the original, face down, into the scanner's feeder tray and click on "Scan Full Page." The original will feed through the scanner. In a few seconds, a preliminary rough "pre-scan" of your original will appear onscreen.

You'll also notice a small "window" superimposed on the image. Use the mouse to drag the window across the image and place it over an area to be scanned. Next, click on "Scan Window" and feed the original back into the scanner. The scanner will digitize the area beneath the scanning window. In a few seconds, the final image will appear onscreen, ready to save to a disk file when the entire picture is finished.

If you've chosen to save your completed image as a DEGAS picture, the size of your scanning window is determined by the resolution of the picture—low-resolution pictures provide the largest windows, high-resolution pictures yield the smallest.

If you've chosen to save your image as an .IMG or PostScript file, the size of your window is limited by the memory size of your machine. A 1040ST running ST Scan has a 714K picture buffer. This is enough RAM to digitize an 8×10 inch photograph at 300 dots per inch.

As you learn to harness all of the scanner's power, a hard disk becomes more of a necessity than a luxury. A large image, such as the 8×10 photo described above, needs more disk space than even a double-sided disk offers. A hard disk system will let you store many such pictures. Moreover, the hard disk's access speed cuts the time needed for saving an image from several minutes to several seconds.

ST Scan's Options menu lets you set the scanner's resolution (75, 150, 200 or 300 dots per inch), adjust the contrast (light, normal or dark) and set the scanning mode to either halftone or line art.

Halftone mode (*Figure 1*) refers to the way newspapers reproduce black-and-white photos. Line art mode (*Figure 2*) is used when reproducing images which lack gray shades, such as sketches and diagrams.

## APPLICATIONS

ST Scan adds new possibilities to your favorite ST graphics software. One reader used ST Scan to digitize the floor plans of her under-construction house.

The existing plans were a mirror-image reflection of the true design of the house. Rather than view the plans through a mirror, she loaded the scanned and digitized plans into DEGAS and used the Block and Distort funtions to turn each floor plan into its own mirror image. After flipping the image on its back, she used the Text mode to re-label each floor plan.

Finally, she made simple scale drawings of her furniture, then used the Block function to place each piece into the floor plan. By saving the blank floor plans and the furniture outlines in separate files, she can quickly create and print many different furniture arrangements.

Turn your favorite drawing or photo into a iron-on transfer for your T-shirt. Digitize your favorite photos with ST Scan and use DEGAS to create a mirror-image of the photo as described above. Next, use a heat-transfer ribbon to print the image to a sheet of paper. Finally, iron the image onto a T-shirt. See *T-Shirt Construction Set* (**Antic**, February 1986) for full information about obtaining heat-transfer ribbons to use with your printer.

Your ST SCAN images may also be used with The Catalog's Cyber Paint software to create ultra-realistic animations.

Since ST SCAN only produces medium-resolution and high-resolution images, you must convert your scanned images into low-resolution DEGAS screens before using them with Cyber Paint. DEGAS Elite and **Antic's** *GrafCon* (July 1986) are two programs which will do this for you.

After conversion to low resolution, you can use your scanned image as a background screen for your animations. Or you could use Cyber Paint's Clip function to ani-

continued on page 46

# Got-A-Minute Graphics

## *Six short ST stunners*

*By* MARIAN LORENZ *and* ALLAN MOOSE

Got-A-Minute Graphics are six short, eye-popping, easy-to-type GFA BASIC color demonstrations—each one requiring less than 30 lines of code. These brief programs showcase many of the most powerful graphics capabilities of the ST. Because of their short, uncomplicated code and the fact that several of the programs have roots in mathematical formulas, they lend themselves to experimentation. For example, a simple value change in a color statement produces interesting variations.

Several suggested variations ask you to delete a line or two from the program. To avoid retyping this line later, you can simply turn the line into a comment. Just precede the line with a single quotation mark ['] or the word Rem. BASIC ignores lines with these marks and your program will run as if the lines weren't there. To make BASIC recognize the line again, remove the quote mark or the word Rem.

### THE PROGRAMS

The six Got-A-Minute graphics programs were designed to run on the ST color monitor in low resolution to make use of the 16 available colors, but many *can* run in medium resolution with four colors. Some will even run on the monochrome monitor, but they don't look very good.

**Listing 1**, FIREWORK.BAS, brings Fourth of July fireworks to mind. The sine and cosine functions create an underlying spiral pattern. Here are some suggestions:

1. Change the value of R to one of these:
R = Sqr(Point)
R = 20 * Sin(2 * Point)
R = 20 * Cos(2 * Point)
R = Log(Point)
R = Log10(Point)
R = Atn(Point)

2. Increase or decrease the number of points plotted, such as:

For Point = 1 To 3000
3. Increase or decrease the step size, as in this line:
For Point = 1 To 3000 Step 0.5
4. Remove the lines:
X = (Point + C)/16 * Cos(Point + C + 60)
Y = (Point + C)/16 * Sin(Point + C + 60)
Plot X + Xcent,Y + Ycent
X = (Point + C)/16 * Cos(Point + C + 60)
Y = (Point + C)/16 * Sin(Point + C + 60)
5. Modify lines:
The fireworks program runs as is, in medium resolution.

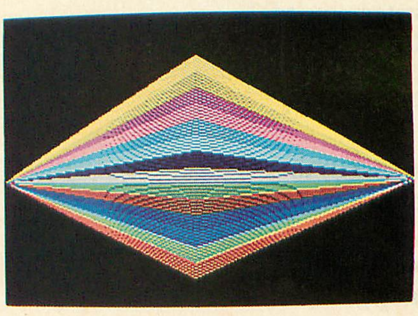
**Listing 2**, DIAMOND.BAS, is so simple that you'll be surprised at the designs it can create. This program forms a colorful diamond shape. After you type it in and run it, we suggest first experimenting with a single colored diamond because of the pattern generated by the GFA BASIC Draw To routine.

Try eliminating the Fill 0,0 statement and the C = Row/10 statement, and change Color C to Color 1, which draws a black diamond. Now experiment with the step size—try non-integer step sizes. Then re-enter the Fill command and C = Row/10. Try changing the value of the divisor in this line or try one of these lines:

C = Sqr(Row)
C =Tan(Row)
C = Log(Row)
C = Log10(Row)
C = 10 * Cos(Row)
C = 10 * Sin(Row)

continued on next page





C = 20 * Sin(2 * Row)
C = 20 * Cos(2 * Row)
To run the diamond program in medium resolution:
1. Before the Fill 0,0 statement, add the line C = 1.
2. Replace C = Row/10 with the following lines:

```
C=C+1
If C = 4 Then
    C=1
Endif
```

## MOIRE

When you look through a window screen that's in front of another window screen, you'll see something called a *moire* (pronounced mwa-RAY or more-RAY) pattern. Such patterns are created whenever two periodic structures are overlapped. The design in the diamond program is a moire-like pattern.

**Listing 3,** MOIRE.BAS, also draws a moire pattern, but it doesn't depend on overlapping structures and can create other designs as well. You can experiment with different values for Style, but Moire works best with Style<1. As well as using other mathematical functions to determine the color number, try these changes:

Change the 2 to a 3 in the following line:
C = (190-Int((Vert * Vert + Horz * Horz)^ Style)/2)
Now delete the next line, and replace it with one of these:
C = Tan(C),
C = 20 * Tan(C)
C = 16 * Sin(C)
For additional interesting variations, you could also eliminate this line:
Plot 320-Horz1,Vert1:

**Listing 4,** STARS.BAS, creates a starlike design. The Rnd statement makes the computer generate a different design each time the program is run. Try:

1. Changing the range of J in the For statement. This changes the size of the design.
2. Increase or decrease the step size. Non-integer step sizes, such as 0.5, yield particularly interesting patterns.
3. Change the color statement using the math functions suggested previously. The Stars program runs in medium resolution as is.

**Listing 5,** SINESCAP.BAS, uses a series of sine waves to build an abstract design:

1. Change the equation Y = Amp * (Sin(X/Per-Phi)) + Axis and the Draw To statements to:
Y = Amp * ((Sin(X/Per-Phi))^ 2)
Plot X,Y
Draw X,Y + Axis To X,Axis-Y
2. Change:
Amp = Int(Map2 * Rnd(1)) to
Amp = .5 * Int(Plot2 * Rnd(1))
and change
Per = Int(100 * Rnd(1) + 1) to
Per1 = Int(100 * Rnd(1))
Below these changes, add the line:
Per2 = Int(80 * Rnd(1))
Change:
Y = Amp * (Sin(X/Per1-Phi)) + Axis to
Y = Amp * (Sin(X/Per1-Phi) + Cos(X/Per2 + Phi/2))
and change
Draw X,Y To X,Axis to
Draw X,Y + Axis To Axis-Y
3. For Sine = 1 to 10 is the line that controls the number of sine waves drawn on the screen. You may wish to change this value.
4. Experiment with color selection. Sinewaves runs in medium resolution if you increase the values to accomodate the screen dimensions and change the value of C.

**Listing 6,** PASCAL.BAS, creates the well-known image of Pascal's Triangle. Experimentation will yield some interesting new designs, but you'll no longer have the classic Pascal Triangle.

1. Change the range of I.

2. Change the DIMension of T.

3. Change colors by adjusting the values in the line:
C = 2 * (Not(T(A)) + 8) ■

*Marian Lorenz and Allan Moose are teachers on Long Island, New York. They have published a number of mathematics-oriented **Antic** programs for both the Atari 8-bit and ST computers.* Listing on page 75

**ST PICTURE SCANNING ARRIVES**
continued from page 44

mate any part of your digitized screen. With ST Scan, Cyber Paint and a little practice, you'll soon be producing feature-length, professional-quality animations.

## DRAWBACKS

At this time, DEGAS is the only widely available graphics software that works with ST Scan. At 300 dpi in DEGAS mode, the scanner can only digitize a small fraction of a page. To manipulate the larger .IMG files, you'll need to use ST LaserPaint, PostScript, Easy Draw or other graphics packages which are not widely available for the ST.

Although most general hobbyists would reasonably question buying a $1,239 peripheral that costs several hundred dollars more than a 1040ST computer, ST Scan might well be a bargain for a serious ST graphics worker, a small business or a large users group. ■

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# Atari Heats Winter Comdex

## New "ST Super-Mini" draws the crowds

by ANITA MALNIG, *START Editor*

Atari used the November Comdex trade show in Las Vegas to stake a claim for the "power without the price" market in high-powered business workstations. Leading Atari's latest assault on Fortune 500 buyers is Abaq (root word for abacus), the new "transputer" previewed by **Antic** in January 1988.

With the Inmos 32-bit IMST-800 microprocessor and leading-edge RISC (Reduced Instruction Set Computer) architecture, Abaq will operate at 10 MIPS (million instructions per second). An ST or Mega becomes the input/output device for the transputer system.

A single transputer can deliver over ten times the power of an IBM PC/AT. But you can connect 10, 100 or even *more* transputers to create a relatively low-cost computer workstation with the power of a super-minicomputer. Talk is that the Abaq will retail in the $5,000 range. Transputers can be linked by a built-in high-speed serial port to form a multiprocessor array or a local area network.

Helios, a Unix-like operating system for Abaq, was developed by the Perihelion Company of Great Britain, as was the transputer board itself. The Helios operating system encourages use of many small programs which work together to create a final product.

Shiraz Shivji, Atari's vice president of research and development, expects that the transputer will be used primarily in engineering and science applications. Included with Abaq will be a very high resolution monitor, capable of four graphics modes—1280×960 in 16 colors or monochrome, 1024×768 in 256 colors, 640×480 in 256 colors with two screens and 512×480 in 16 million colors plus overlay.

No firm delivery date is set, but late 1988 seemed to be the most talked-about time frame by Atari executives at Comdex. From **Antic's** first-hand observation, crushing Comdex crowds were being attracted by Abaq's crisp, vibrant graphics—such as four separate pictures running simultaneously.

### CD-ROM AT LAST

Shortly after **Antic's** October 1985 cover story about the Atari 540-megabyte CD-ROM system running Grolier's encyclopedia on a single compact disk, Atari announced that it wouldn't bring this product to market until CD-ROM players dropped in price from $1,000 to the $500 range and included the capability of playing music from standard compact audio disks. That time apparently is now!

The Atari CD-ROM is now supposed to be available in February, 1988, at a suggested retail price of $599. The CD-ROM connects to ST and Mega computers through the DMA (direct memory access) communications port that transmits data at up to 10 million bits per second. The player provides near-instantaneous access to compact disks that store 540Mb of data—more than 1,000 floppy disks or 200,000 printed pages.

Demonstrated at Comdex was a visual dictionary from Facts on File. It categorized topics such as transportation or food. You could click on the transportation theme and choose from an array of topics such as ferries, container ships, airport terminals and so on—all items illustrated. Speech output identified each image in French and English.

### DESKTOP PUBLISHING

Atari is marketing G.O. Graphics' sophisticated desktop publishing program, Deskset. This works as a front end to the CompuGraphics professional phototypesetting equipment, offering 1,800 fonts. Deskset could design entire commercial publications such as **Antic** and START.

Deskset, which runs only on a Mega, was demonstrated at Comdex on the Atari SLM804 laser printer. Deskset uses the GEM environment and offers all standard features of the most sophisticated desktop publishing programs—including kerning, columns, boxes, rules and the merging of text and graphics. Look for this product by late 1988.

### MORE ATARI PCs

As the $799 Atari PC1 first shown in January 1987 was just about to come to market, Atari announced expansions of its IBM-compatible line. The PC2 is a dual-speed XT compatible that adds five expansion slots to the versatile PC1 configuration. The PC4 is an IBM PC/AT-compatible that uses the 80286 microprocessor. It has switchable clock speeds of 8 or 12 Mhz, VGA-compatible video, four AT-style expansion slots, up to one megabyte of system RAM and accepts an 80287 numeric coprocessor.

Atari also announced "PromiseLAN," a local area network that will connect as many as 17 PCs, using off-the-shelf telephone wire. Soon to go under development are PromiseLAN adaptors for the Mega and ST computers. This would enable the Mega and the Atari laser printer to share data with PCs and Macintoshes. ■



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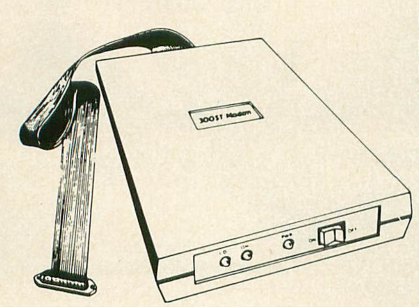
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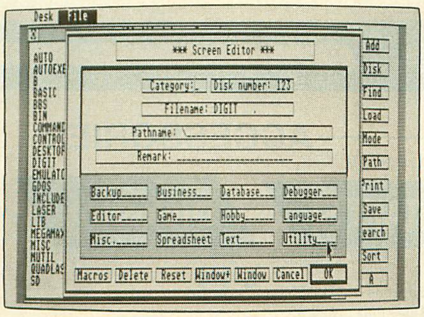
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CIRCLE 040 ON READER SERVICE CARD

# Utility Toolbox

*Super-Directory, M-Cache and Fast*




## SUPER DIRECTORY

The GEM-based **Super-Directory** disk-catalog program works with hard or floppy disks and supports printing or sorting operations. It also lets you put comments on each program. Booting Super-Directory brings up an empty window with dialog buttons on the side. Just click on the proper button to open a new dialog box.

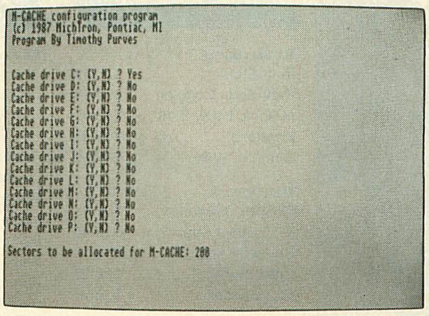
You can load a directory file into memory, then append it to an existing file. First, choose a disk drive to read, then click on the ADD box which brings up a new dialog box. Now enter the identifier for the disk and all all of the information will load in automatically. If you add no information to the file other than the name and the path, it'll take 10 to 15 seconds to read each directory on a disk. I can have up to 9,000 files on my 1040ST.

The SORT operation is the best part of this program. It's a real speed demon when finding and manipulating your files. In tests I ran, alphabetizing 2,000 files, sorting these alphabetized files by size, and finding all .PRG files each took about 15 seconds. The print utility has several options. But the major one is the ability to print information for each file with, for instance, a given extender.

Overall, this is a quick, user-friendly program. It has no bugs and is a fine addition to the MichTron line.—SOL GUBER

$39.95, MichTron, 576 S. Telegraph, Pontiac, MI 48053. (313) 334-5700.

CIRCLE **187** ON READER SERVICE CARD




## M-CACHE

**M-Cache** is a combination of RAM-disk and hard disk—but without the drawbacks of either. If you're a hard disk owner, you'll find it a necessity for speeding up your accesses. This small RAM-resident program stores into memory the sector data you read. So when you access the data again, your ST will retrieve the data from RAM—which is even faster than your hard drive.

After the first time, the directory data is read almost instantly. You don't even hear your hard drive spin. A special algorithm determines the most commonly-read sectors and optimizes the use of the cached data, so your short, repetitious disk accesses are decreased. M-Cache also saves data to the hard disk as well as to RAM, preventing data loss if you have a sudden power outage.

M-Cache contains the caching program itself and the Installer, which lets you decide how much memory M-Cache will use (50 to 200K). It also lets you determine which hard disk partitions it will monitor.

After you boot up, there's no evidence that M-Cache is even there — but if, for instance, you write programs in Modula-2 where many link files are needed, M-Cache can speed up the compile time by about 50%. Any program that needs hard disk access and repeatedly uses the same files will operate much faster.—SOL GUBER

$49.95, MichTron, 576 S. Telegraph, Pontiac, MI 48053. (313) 334-5700.

CIRCLE **188** ON READER SERVICE CARD

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**Fast**, a collection of desktop accessories, features a built-in DOS, Editor, Cardfile, Calendar, Clock, Calculator and ASCII Table. These all appear under one entry in the Desk menu—clicking on it brings up a window for you to select the tool you want.

ST-DOS is a resident disk operating system similar to MS-DOS. Once you learn it, ST-DOS can be more efficient than the GEM desktop. For example, to copy all the files with a .DOC extender from drive A to drive B, just type "COPY A:*.DOC B:"—much faster than clicking on each .DOC file

continued on page 54

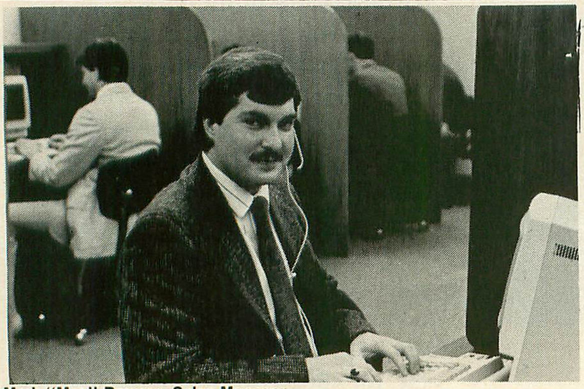
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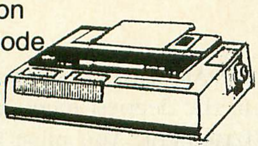
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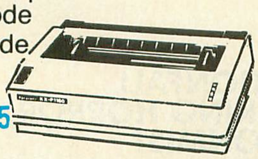
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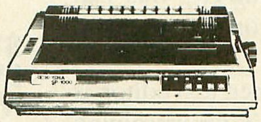


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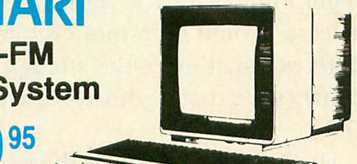
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**ST UTILITY BOX**
continued from page 51

in a window and dragging it to the drive icon. Among other things, you can set time and date, get a directory, see the contents of a file, rename or delete a file, and set an alarm. The formatting option supports four different formats, including two that can store more information than usual on a disk.

ST-EDIT, a full-screen text editor, is more like the MINCE programming editor than a word processor. It uses the entire screen, so you can't enter notes while looking at other information on the screen, and all commands are entered via the keyboard. ST-EDIT supports search, replace, block moves, copies and deletes, letter transposing, and some limited macros for using in the editing sessions. There's no wordwrap, and if you don't press [RETURN] at the end of every line, then the number of "physical" lines will be different from the number of "logical" lines.

CARDFILE is a three-level address book. In Level 1, you can print all the cards in the file, select one of two formats for all printing (list or label), and change the field names on the cards. Level 2 shows all the cards beginning with the area selected. You can edit, delete or print selected cards, create a new card, or autodial one of the two phone numbers on the card. Creating or modifying a card brings you to level 3, where you actually enter information on the card, save it or print it.

Fast also has a digital clock, an ASCII/decimal/hex table, a four-function calculator and a calendar displaying one month at a time. (You cannot access any date before 1980.)

The documentation has several *mistakes* and typos. Sometimes the picture of a screen or dialog box doesn't match the description, or text is missing or nonsensical. The ST-DOS section assumes you know quite a bit about MS-DOS.—DAVID PLOTKIN ■

$49.95. Migraph, Inc., 720 S. 333rd Street, Federal Way, WA 98003. (206) 838-4677.

CIRCLE **189** ON READER SERVICE CARD

# Games Gallery

*Reviewing 9 varied ST entertainments*

## STATIONFALL, LURKING HORROR, MOONMIST

Infocom's most recent all-text adventures cover a wide variety of interactive fiction experiences.

**Stationfall** picks up five years after the popular Planetfall adventure, when you were a lowly Stellar Patrol ensign who became shipwrecked on the planet Resida. While saving it from destruction, you met and befriended Floyd, a somewhat dizzy robot who'd often go off and play hide-and-seek. Now as a reward for your heroism, you're a lieutenant—but things aren't a whole lot better.

Your new assignment is to pick up a load of forms from a nearby space station. Fortunately, you get to requisition a robot to take along. (Guess who?) You and Floyd discover the station abandoned: the crew had towed in a derelict spaceship containing a mysterious device—which affected all the machinery aboard the station. Even now, you can no longer rely upon Floyd.

The game is written with the same light-hearted tone that made Planetfall such a delight. In-jokes and references to earlier Infocom games are commonplace. The puzzles are of average difficulty, and the one involving decoding an alien message is especially clever. Stationfall is a story full of challenge, humor and suspense.—HARVEY BERNSTEIN

You'll want to play **The Lurking Horror** if you prefer the creepy feeling of something not-quite-human under the bed. Infocom's first all-out horror tale is written in the vein of H.P. Lovecraft and Stephen King. Unfortunately, it's rather disappointing.

You're working late in the computer center at G.U.E. Tech. When you accidentally access a file belonging to the Alchemy Department, you end up in the deepest recess of the school's basement. You must find your way out of a supernatural world filled with giant rats, demons and sacrificial rituals.

While well-written, Lurking Horror is as heavy as Stationfall is light, and that is its main problem. The text is dry and uninvolving. I yearned for the standard touch of Infocom humor. Rather than being a part of the story and feeling chills down my spine, I never lost the feeling that I was just interacting with words on a screen.—HARVEY BERNSTEIN

**Moonmist** is Infocom's first gothic romance. Your friend Tamara's letter from a castle in Cornwall was full of hope, joy and anticipation—she's engaged to marry Lord Jack Tresyllian. But the next letter, just four days later, contains none of that joy. Tamara thinks someone's trying to kill her. And that someone just might be a ghost, so she wants you to come and help.

Deceased Uncle Lionel has hidden a treasure in the Cornwall castle. Any of the people currently lodging there might murder for the treasure. That, at least, would be a more down-to-earth explanation of the attempts on Tamara's life than a ghost—or would it?

The Tresyllian Castle is the perfect place for such an adventure. Secret passages, doors and rooms add to the challenge and create an aura of mystery. In some games, once the mystery has been solved, the game goes on the shelf for good. Not so with Moonmist. There are four different versions of the game on disk, each with a different guilty party—perhaps—and slightly different plot details. Which version you play depends on your an-

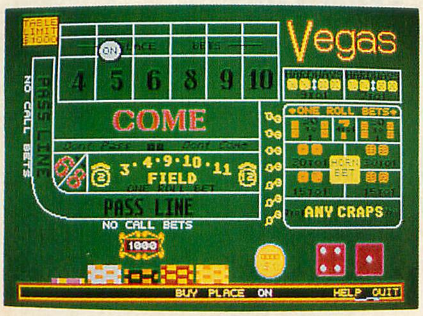
continued on page 56

swer to a question upon arriving at the castle.

Most of the riddles in Moonmist are in the form of limericks or puzzles left by good old Uncle Lionel, who wanted to make the treasure-hunters *work*. The riddles themselves aren't difficult, but applying them to finding the treasure is a different matter entirely. Another interesting aspect of Moonmist is that you can play as a male or female character. Jack, Tamara and the guests in the castle react to you according to your sex. The game's parser is flexible and does a good job of letting you know what it doesn't understand. Save the game often. There aren't many dangers to your personal safety, but the blind alleys you could (and will) stumble into will waste precious time.—RICK TEVERBAUGH

$39.95 each. Infocom, 125 CambridgePark Drive, Cambridge, MA 02140. (617) 576-3190.

CIRCLE **183** ON READER SERVICE CARD




## VEGAS GAMBLER, VEGAS CRAPS

In **Vegas Gambler** you can play the slots, blackjack, poker machine and roulette. **Vegas Craps** has just a craps table, but because the game has so many betting options, a program containing them all *must* be complex. However, playing Vegas Craps is actually quite simple. The game has a well-written 29-page manual and descriptive onscreen help. To place bets, just drag your chips to the correct position on the table. Then click on the dice.

Vegas Gambler isn't much different from other gambling game packages. The slot machine is just as boring—the hypnotic fascination you'd experience at a casino with one-armed bandits doesn't translate well. But the blackjack simulation is excellent and its simple rules and complex strategy are engrossing. This one is worth the price of the entire package.

The standard five-card poker machine is entertaining, but I prefer human opponents. Roulette resembles craps in some regards, most notably in the variety of bets allowed. Strategy is limited, but roulette is so much a part of the mental picture of casinos that its inclusion in the program was a must.

In Gambler you start with $500 and can carry your stake from game to game. You can also save the amount and continue later. In Craps, however, you start with $1,000, which you can't transfer to or from Vegas Gambler. At some point during either game, the program will ask for a code from the enclosed security card. This makes it easy to back up your copy, but not to provide copies for the entire neighborhood.—RICK TEVERBAUGH

$34.95 each. Logical Design Works, 780 Montague Expressway #403, San Jose, CA 95131. (408) 435-1445.

CIRCLE **182** ON READER SERVICE CARD

## ROADWAR 2000

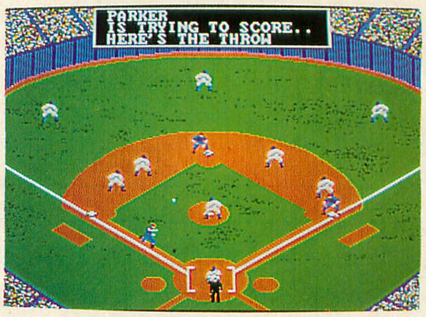
It's the end of the 20th century and terrorists have launched a germwarfare attack on the United States. Chaos reigns. Cities throughout North America are partly controlled by one vicious faction or another. The roads themselves are fair game, with armed, wheeled gangs attacking people for gasoline and supplies. If **Roadwar 2000** smacks of "Mad Max," you've got the right idea. As a road gang leader, you must take control of as many cities as possible, manage supplies and add new members to the gang.

Eventually you're recruited by the Government Underground Biolab, which is trying fervidly to cure the disease. Your ultimate goal is to find eight missing scientists and return them to the lab, where they can continue their work. Exciting? Guess again.

There are three types of combat against rival gangs. In Tactical combat, the player has control over each vehicle's movement and firing. But Tactical battles are long and boring. In Quick battles and Abstract battles, the computer resolves everything, but the text messages scroll by too quickly to absorb. The only difference I've noticed between Quick and Abstract battle is that in Abstract, adversaries ram each other, and in Quick, they can also *shoot* each other.—HARVEY BERNSTEIN

$39.95. Strategic Simulations, Inc., 1046 N. Rengstorff Avenue, Mountain View, CA 94043. (415) 964-1200.

CIRCLE **184** ON READER SERVICE CARD




## MICRO LEAGUE BASEBALL II

**Micro League II** features relatively realistic ball and player movement, a waving crowd, an active scoreboard and, especially, the statistics and numerically-represented characteristics of baseball players, real or imaginary.

But for all the entertainment potential and the "What If?" possibilities—"How would Ted Williams fare against Dwight Gooden?" and "Could the '75 Reds hold their own against the '61 Yanks?"—ST Micro League is a bit disappointing. Much more could have and should have been done with the ST edition of this game.

In a way, the graphics in the ST game are so improved that its visual *shortcomings* stand out more. The graphics often belie the scoreboard's descriptions: "A rocket out to center. . . Mays on his horse. . . He's got it! Holy Toledo!"—yet the center fielder stands stock-still.

Positive changes, however, include the addition of knockdown pitches

(violent, dangerous—but part of the game) and brief, entertaining remonstrations, as well as rain delays. Players may have to leave the game because of injury—and managers because of ejection. And outfielders now can throw out batter-runners trying to stretch singles into doubles, etc.

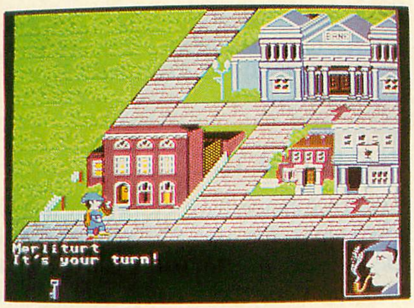
In Micro League II's "Quik-Play" option, the game rapidly plays itself, sans graphics (or human participation), and displays the statistics. In fact, game stats pop up after *every* Micro League II game, and you can compile them for either or both teams. In short, Micro League's Box Score/Statistics disk, sold separately for the Atari 8-bit, is now "built in" to ST Micro League.

Ballpark factors are now at least partially considered. (These are crucial: some stadiums significantly increase offense potential, others decrease it.) And if the home team plays in a stadium with artificial turf, the graphics show a synthetic turf field, and the game reflects the differences between baseball played on grass and on Astroturf.

But the game should have better command of some baseball rules, especially those regarding the designated hitter and awarding saves for pitchers.—GREGG PEARLMAN

$59.95, color monitor required. Micro League Sports Association, 2201 Drummond Plaza, Newark, DE 19711. (302) 368-9990, (800) PLAYBAL.

CIRCLE **200** ON READER SERVICE CARD




## 221-B BAKER STREET

Sherlock Holmes has been so enduring a literary character that it was only a matter of time before a computer game appeared that would recreate the feel of 19th century London, plunging the player into the midst of Sherlockian adventure. I'd love to report that **221 B-Baker Street** is that game. Unfortunately, I can't.

Baker Street, adapted from a board game, can be commended for at least being one of the few computer games that supports multi-player interaction. One to four players compete to solve one of 30 cases in a case book that accompanies the disk. Assuming the role of Holmes, Dr. Watson, Inspector Lestrade of Scotland Yard, or Irene Adler, each player races around a simulated board. Upon arrival at the Theater, Bank, Tobacconist's, etc., you're given a clue. When you think you know the solution, you must race back to Baker Street and successfully answer questions about the case before your opponents do.

There are problems. Not only are the cases easy, but there's no logic in where to find valuable clues. For example, a murder is committed at the theater. However, going to the theater first won't help any more than going to, say, the druggist. Also, there's little deduction involved. Instead, most clues are word puzzles—sometimes misspelled!—that even the youngest player can solve easily.

What we have is little more than a game of luck, with an electronic roll of the dice having more bearing over who'll solve the case first than deductive prowess. There is some strategy involved, as players can make clue locations inaccessable to other players. However, when it comes to recreating the world of Sherlock Holmes, 221-B Baker Street just doesn't cut it. I will admit that the graphics are fairly good but, aside from a handful of quotes in the documentation, no attempt is made to capture the style of Sir Arthur Conan Doyle's beloved text. —HARVEY BERNSTEIN

$29.95. Datasoft, 19808 Nordhoff Place, Chatsworth, CA 91311. (818) 886-5922.

CIRCLE **186** ON READER SERVICE CARD

## SUB BATTLE SIMULATOR

Epyx must be very high on **Sub Battle Simulator** to think it could compete with such excellent submarine simulations as Silent Service and Gato. Certainly the graphics are excellent—the outlines of the enemy ships are incredibly detailed—and there's a complete 32-page manual. But Sub Battle isn't a good all-around effort.

It does have more options than any other simulation I've seen. You can choose from Target Practice, Single Mission and Wartime Command. In the last two options you can play either the German or American side. The German commander begins in 1939, fighting the U.S. and British forces. The American commander starts in 1942 against the Japanese Fleet in the Pacific. A time-compression feature speeds things up, especially during Wartime Command.

On the main viewing screen, the control panel contains periscope height and remaining ammunition. Another section relays messages from crew members. Also displayed are depth, speed, heading and viewing screen direction. The menu bar across the top, among other things, lets you save a game. The viewing screen can show periscope, binocular and tower views, sonar or radar screens, map display or a side view—especially helpful if you're being hit by depth charges.

Now we come to the weaknesses. While submerged and closing in on an enemy convoy, I was told I was in shallow water, so I surfaced. The depth gauge showed me to be on the surface, but when I wanted to shift to diesel power and conserve batteries, I was told to wait until we surfaced. Other problems include being able to sink big enemy ships with just gunfire, and the ability of the enemy to stay directly overhead for long periods even though you aren't being picked up by their sonar. Perhaps Epyx tried too hard to get Sub Battle out before all the sub warfare fans had chosen other simulations.—RICK TEVERBAUGH ■

$39.95. Epyx, 600 Galveston Drive, P.O. Box 8020, Redwood City, CA 94063. (415) 366-0606.

CIRCLE **185** ON READER SERVICE CARD

# ST New Products

*By* GREGG PEARLMAN, *Antic Assistant Editor*

## IT'S MAC TONIGHT

Use Macintosh software on your ST with help from Data Pacific's long-awaited three-program package, **Magic Sac Professional**. Magic Sac Plus is what lets your ST run Mac software; Translator One lets your ST drives read and write to Mac disks and convert between ST, Mac and IBM PC formats. The Magic Epson Printer driver lets you print with all Epson and Epson-compatible 9-pin and 24-pin printers.

$449.95. Data Pacific, Inc., 609 E. Speer Blvd., Denver, CO 80203. (303) 733-8158. FINAL.
CIRCLE **281** ON READER SERVICE CARD

## PRINT IN UNISON

Create customized signs, banners, stationery, calendars and greeting cards with the flexible **PrintMaster Plus**. Each design option—text, graphics and layout—can be addressed repeatedly, in any order, before the final printout. You can also preview your work at each step of the design process. You'll have over 100 graphics to choose from, and over 280 more are readily available. PrintMaster Plus has a built-in graphics editor and 10 fonts—all but two of which allow upper and lowercase lettering.

$39.95. Unison World, 2150 Shattuck Avenue, Suite 902, Berkeley, CA 94704. (415) 848-6670. FINAL.
CIRCLE **280** ON READER SERVICE CARD

## HASTA BE A TWIST

**Pinball Wizard**, an action-oriented pinball simulation and building set, takes full advantages of the ST's color and sound capabilities and features detailed graphics, lights and sounds that give you the feel of playing actual pinball. This one-to-four-player game has four different simulations, complete with backboard, flippers, tilt sensors, etc. Difficulty levels can be adjusted for each table. The parts and paint menu contains targets, flippers, bumpers, spinners and discs, and you can install a stroboscope, which makes the ball disappear intermittently.

$34.95. Accolade, 20813 Stevens Creek Blvd., Cupertino, CA 95014. (408) 446-5757. PRESS.
CIRCLE **282** ON READER SERVICE CARD

## CACHE ON HAND

The **Discache** hard and floppy disk-caching system stores frequently accessed sectors in RAM so you can access them more quickly. Flexible and easy to use, the GEM-based Discache caches single-sector and multiple-sector reads. It runs on any ST, including the Mega.

$34.95. Amgem, Inc., P.O. Box 1338, Bethesda, MD 20817. (301) 762-8870. PRESS.
CIRCLE **278** ON READER SERVICE CARD

## MARVIN SOUNDWAVE

The **Marvin Transientenrekorder** is a digital oscilloscope that gives you 15 channels, 20 milliseconds per 8-bit sample with one channel, complete GEM interface, 20 mHz bandwidth, 277L and analog inputs, and the capacity for 16,000 samples per channel.

Marvin AG, Fries-Str. 23, 8050 Zurich, Switzerland. 01/302 21 13. PRESS.
CIRCLE **275** ON READER SERVICE CARD

## TERRORPODS

**Terrorpods** features a Nationality Selection Screen—enabling you to play this strategy-arcade game in one of several languages, including American English and British English. The fully scrolling 3-D playfield will keep you on your toes as you head toward the asteroid Colian to discover the secret of the Empire's ultimate fighting machine—the Terrorpod.

About $44. Psygnosis, Ltd. U.S. Distribution: Computer Software Services, 2150 Executive Drive, Addison, IL 60101. (312) 620-4444. PRESS.
CIRCLE **285** ON READER SERVICE CARD

## SENTRY

In **The Sentry**, a dynamic environment of some 10,000 unique landscapes and the press of time conspire to make your life miserable. You, as a lone robot, fight the Sentry and her Landgazers while you attempt a *coup d'etat*—which will never come off if you're not careful to avoid her energy-absorbing stares. The Sentry comes with an illustrated booklet, a key guide and a pin-on button.

$44.95. Firebird, 71 N. Franklin Turnpike, Waldwick, NJ 07463. (201) 444-5700. PRESS.
CIRCLE **284** ON READER SERVICE CARD

## ST VEGAS

Play the slots, keno, blackjack and a draw poker machine in **Video Vegas**. They look, feel and play like their Las Vegas counterparts, and blackjack includes a card counting feature.

$34.95. Baudville, 5380 52nd Street, Grand Rapids, MI 49508. (616) 957-3036. PRESS.
CIRCLE **283** ON READER SERVICE CARD

## SPRITES

**ST Sprite Factory** consists of four programs: the arcade game programming utility for sprite-based games that can have more than 500 screens; a game map-making program; a joystick program that lets you create a sequence of movement, frame by frame; and a demonstration of fine and coarse scrolling. OSS Pascal source code is included for the first three programs, and a collision detection tutorial is included as well.

$39.95. Future Software Systems, 21125 Chatsworth Street, Chatsworth, CA 91311. (818) 341-8681. FINAL.
CIRCLE **279** ON READER SERVICE CARD

## MU-SCRIPT I

**MU-Script I**, a slightly scaled-down version of MU-Script II, has a 16-track sequencer, MIDI event editor and multi-staff notation. Quantizing, autopunching and individual event editing are all at your disposal, and individual tracks can be assigned to any MIDI channel and scaled to any of 16 volume levels for multi-synthesizer or multi-tymbral setups. A single track can be split into treble and bass tracks.

$99.95. Quiet Lion, P.O. Box 219, Sun Valley, CA 91353. (818) 765-6224. PRESS.
CIRCLE **269** ON READER SERVICE CARD

## SIX FROM TDC

TDC Distributors have released the following games for the ST: **Aliants: The Desperate Battle for Earth**, **Stock Market**, **Time Blast**, **Knicker Bockers**, **Liberator** and **Mouse Trap**. All games cost between $14.95 and $29.95.

TDC Distributors, Inc., 3331 Bartlett Blvd., Orlando, FL 32811. (800) 289-8900, (305) 423-1987 in Florida. PRESS.
CIRCLE **268** ON READER SERVICE CARD

continued on page 62

# ST Music

*DXMATE, Music Construction Set*

## DXMATE

**DXMATE** is a patch editor/librarian program for the widely used Yamaha DX 21/27/100 four-operator keyboard synthesizers. There are three classes of functions for a patch editor program: system setup, librarian manager and sound editor. While the GEM-based DXMATE does some of these very well—particularly the multitude of patch parameter change options—it falls short in others.

The program runs only with a monochrome monitor—unfortunate, as only about 20% of the ST owners in the United States have monochrome systems. The accompanying manual is well written, and contains numerous screen displays—which is important, as no telephone number for the company is given.

Patch editing is the heart of DXMATE and it does this very well. All patch parameters are laid out on a single screen, including graphical representations of the four-operator and pitch envelopes. Performance parameters such as breath controller, modulation wheel, and foot controls, are accessed within a separate window activated from the drop-down menu. The UNDO function restores the last 30 changes made, one by one. The COMPARE function compares an edited patch with its original version.

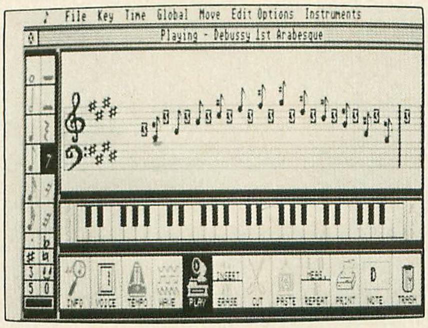
For system setup operations, you can't use a master keyboard with rechannelization of MIDI output channel. You can play the synth keyboard while editing a patch to evaluate the sound. Alternatively, various computer keys have been mapped to play notes ranging from C2 to G4. For this, note velocity and duration can be set to one of five levels. The on-line help is excellent. A nice feature is a 1500 MIDI event sequencer that lets you set up a short piece to play while evaluating patches. Sequencer data can be saved to disk, but only the synth keyboard can be used for entering the data.

Librarian functions are the weakest part of the program. Only a single patch bank is supported, which prevents easy patch relocation.

The bottom line is that while DXMATE does offer a versatile parameter editing interface, the rest of the program is not up to the quality of its competition. The limited librarian features, lack of hardcopy and restriction to monochrome systems are important minuses.—JIM PIERSON-PERRY

$99. Synchro-Systems, P.O. Box 3093, Saskatoon, Saskatchewan, S7K 3S9, Canada.

CIRCLE **190** ON READER SERVICE CARD




## MUSIC CONSTRUCTION SET

**Music Construction Set** has every feature you could ask for in a music program for hobbysts. Its wonderful user interface consists of logically arranged, well-organized icons and pull-down menus. You can set tempo and time signatures, transpose, set sharps and flats, and vary note duration. Functions such as inserting, cutting and pasting can be performed with word processor-like ease via the mouse or simple keyboard commands. Note durations, rests, sharps, flats, etc., are easily changed with a mouse click.

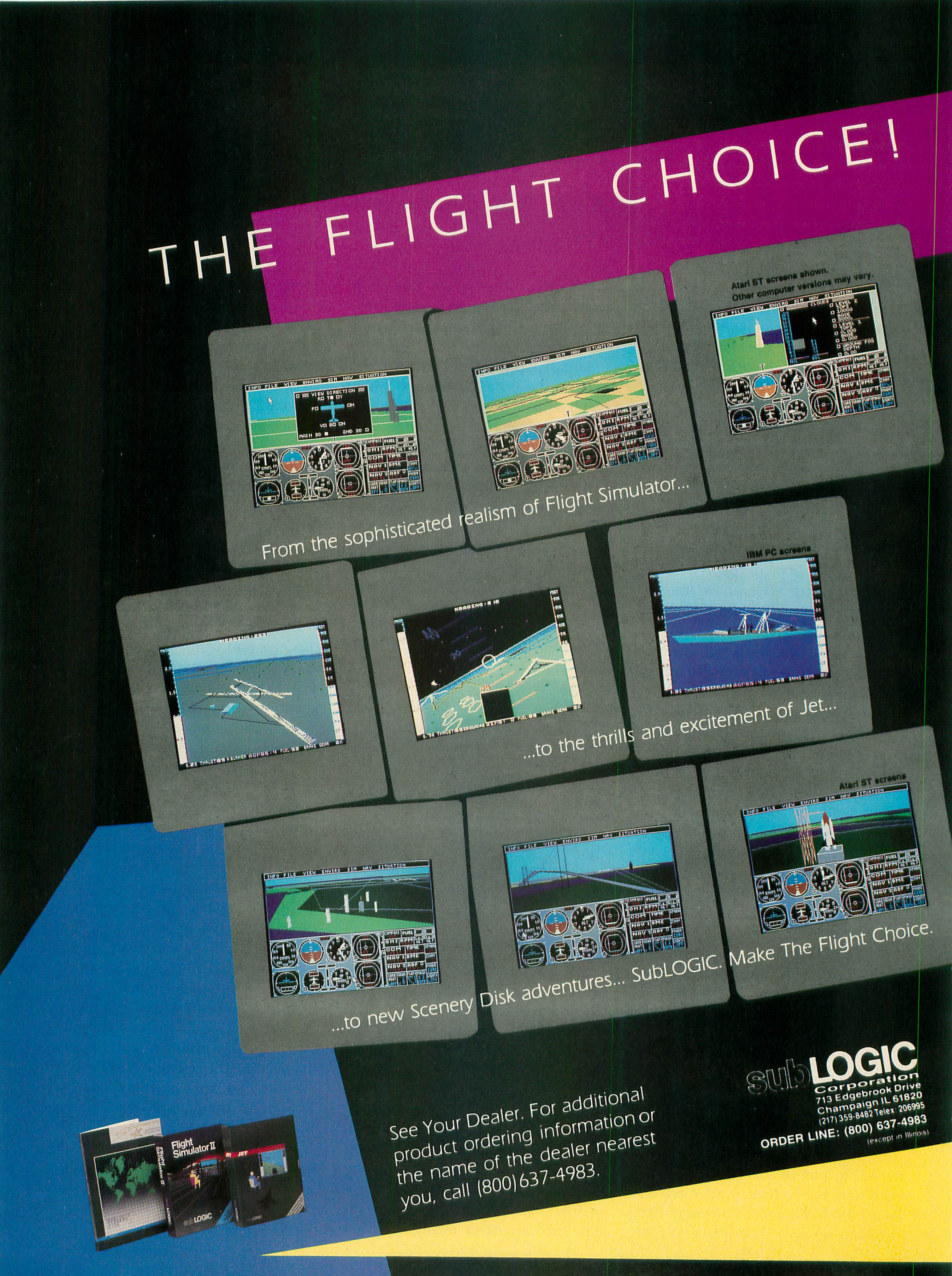
The built-in eight-point wave generator lets you custom-tailor the sounds generated by the ST's sound chip. A set of 16 types of sounds ranging from pianos to percussion instruments are included along with several pre-composed musical selections. If all this isn't enough, the program generates printouts, and almost all user parameters are fully configurable. As a grand finale, the program can use MIDI for input and output. The only limitations are that you must load in the song that you want to play before running another application, and that only one song can be loaded at a time.

But despite these glowing words, this program is *not* for me. It seems as if the programmers paid careful attention to ease of use but not enough attention to actual *usefulness*. The program supports only *three* MIDI channels, three internal ST sounds or a combination of the two. This means that only such combinations as two MIDI voices and one ST voice are allowed. For the more serious user, this puts this program into the musical toy category. Also, no tracks are supported. There is *no* reason why this program could not support more than three voices out of 16.

Still, for around $50 this program is unbeatable for music students or for those who love to tinker with sounds. Even at $75-$100, with the addition of tracks and support of all 16 MIDI channels, this program could possibly become the one of the most flexible music software packages available written for the Atari ST.—ROGER YAP JR. ■

$49.95, color monitor required. Electronic Arts, 1820 Gateway Drive. San Mateo, CA 94404. (415) 571-7991.

CIRCLE **191** ON READER SERVICE CARD




CIRCLE 026 ON READER SERVICE CARD

# 3D STEREOSCOPIC COMPUTING




**Atari ST dealers and users: Enter the next dimension in computer graphics.**

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LC Technologies' StereoTek™ system adds the ultimate in depth to Atari® ST computer graphics—true 3D displays in full color or high-res monochrome.

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The StereoTek system includes a pair of Liquid Crystal Shutter glasses, connecting cable, and an ST cartridge interface unit that supports two pairs of glasses. You also get complete documentation, the DEGAS Elite Stereo Desk Accessory, and Stereo CAD-3D by Tom Hudson.

**Software now available in StereoTek 3D**

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- 3D Developers Disk
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Ask for the StereoTek Operator.



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LC TECHNOLOGIES A Tektronix Company

Software available through Antic.
* Suggested retail price.

CIRCLE **069** ON READER SERVICE CARD

# ST New Products

continued from page 68

## DARK CASTLE

The superbly animated **Dark Castle** features more then 70 digitized sound effects, including a hair-raising organ solo and the screams of the Black Knight's prisoners. On your quest to find the Black Knight and clean his clocks, you must fight your way through 14 increasingly difficult rooms. Standing in your way are plague-infested rats, vicious bats and a fire-breathing dragon, not to mention the dungeon's torturer and a diabolical wizard.

$39.95. Three Sixty Inc., 2105 S. Bascom Avenue, Suite 290, Campbell, CA 95008. (408) 879-9144. PRESS.
CIRCLE **256** ON READER SERVICE CARD

## QUIZPLUS

This mouse-driven quiz and tutorial program has the "plus" of displaying DEGAS-format graphics *during* the quiz or tutorial. **QuizPlus** is designed for the educator who uses the ST for student instruction. A few simple QuizPlus commands turn a quiz into a colorful educational experience.

$29. Mad Scientist Software, 2063 North 820 West, Pleasant Grove, UT 84062. (801) 785-3028. PRESS.
CIRCLE **277** ON READER SERVICE CARD

## TAKE IT ALL OFF

Now there are two more female **Data Disks** for Strip Poker by Artworx. Disk 4 features Dawn and Crystal, and Disk 5 has Cynthia and Janice. Each disk was done by a different artist, providing variety in appearance, personality and style of play. These disks require the Strip Poker master disk.

$19.95 each. Artworx Software Company, Inc., 1844 Penfield Road, Penfield, NY 14526. (716) 385-6120; (800) 828-6573. PRESS.
CIRCLE **259** ON READER SERVICE CARD

## WHERE'S REALITY?

**ARM+C** and **ARM+D** are detailed city and dungeon maps for Alternate Reality. (**Antic** review 11/87.) ARM+C ($4.95) points out every guild, bank, casino, dungeon, secret wall, etc. Also included is a list of 52 potions, a two-year calendar and a journal log sheet. ARM+D ($5.95) shows all four levels of the dungeon and includes a journal log sheet, as well as hints on game play. The maps cost $10 together.

Mars Merchandising, 15 W. 615 Diversey, Elmhurst, IL 60126. (312) 530-0988. PRESS.
CIRCLE **251** ON READER SERVICE CARD

## CROSS-DEVELOP

Memocom's **Universal Cross-Development Kit** includes a table-driven cross-assembler, source/text editor, communications software and MEMULATOR II in-circuit EPROM emulator. The cross-assembler includes tables and sample source programs for 20 different microprocessors. You can create, edit and assemble source programs for almost any 4-, 8- or 16-bit microprocessor or microcontroller.

$575. Memocom, 1920 Arbor Creek Drive, Carrollton, TX 75010. (214) 446-9906. PRESS.
CIRCLE **257** ON READER SERVICE CARD

## CATALOGGER & LOCATOR

Coin and stamp enthusiasts can use **The Catalogger** to find any item in their collections, and **The Locator** lets them find items in whatever type of collection or context they set up. Both programs feature powerful search, sort and update routines, file boxes, pull-down menus and built-in help screens. The programs' multi-key search quickly finds any item in a database of up to 1,500 items. Also included is a mini-spreadsheet.

$17.50 each. Rascom, 22128 Newkirk Avenue, Carson, CA 90745. PRESS.
CIRCLE **271** ON READER SERVICE CARD

## DIET RIGHT

This nutritional analysis program was written by two M.D.'s. **Diet**'s features include weight loss and daily caloric requirements, exercise caloric expenditures, an expendable GEM-based menu planner and calorie counter, ideal diet and body weight recommendations and complete documentation. Co-developed by Ron Schaefer, author of BASIC Alert (**Antic**, March 1987).

$25. Schaefer Supergraphics, 1201 Wilder Avenue #1801, Honolulu, HI 96822. (808) 523-3353. PRESS.
CIRCLE **258** ON READER SERVICE CARD

## EASY SLEAZE

Life as we know it would lose considerable charm without polyester. That's why there's **Leisure Suit Larry in the Land of the Lounge Lizards**, Sierra's 3-D animated adventure game. Gamble, drink yourself silly and indulge in a ridiculous amount of "adult fun." The game's 50 fully-animated scenes offer slot machines and blackjack—which are just like their Las Vegas counterparts—as well as full facial views and expressions (which demonstrate the importance of just the right kind of pickup lines).

$39.95. Sierra On-Line, Inc., P.O. Box 485, Coarsegold, CA 93614. (209) 683-6858. FINAL.
CIRCLE **263** ON READER SERVICE CARD

*New ST product notices are compiled from information provided by the products' manufacturers. **Antic** assumes no responsibility for the accuracy of these notices or the performance of the product. Each mention is followed by a code word indicating that, at press time, **Antic** had seen a FINAL marketable version, near-final BETA, earlier ALPHA, incomplete DEMO, or PRESS release.*

### Coming in the March 1988 Antic

*Atari XE Game System, Nintendo and Sega: A Comparison Review*
*8-Bit: Dungeon Creation Set, Big Letters Editor, Scrolling Text Windows*
*ST: Return of BASIC Game Wizards Pratt & Everman, Timeworks "Sidekick" Review*
*Low-Cost Printers from Panasonic and Okidata*
*Super Disk Bonus for both 8-Bit & ST*

# SOFTWARE LIBRARY



**DISK SUBSCRIBERS:** Programs for 8-bit Atari computers can be used immediately. Just follow instructions in the accompanying magazine articles. ST Owners: See monthly disk's ST Help File for instructions on how to transfer programs to 3-1/2 inch disk.

**DOS COMPATIBILITY:** All 8-bit programs published by **Antic** are tested to work with Atari Disk Operating System (DOS) 2.0S and 2.5—*not* with the incompatible DOS 3.0. DOS 2.0S is available on each Antic Monthly Disk. Copy the DOS.SYS and DUP.SYS files.

# TYPING SPECIAL ATARI CHARACTERS

**Antic** printed program listings leave a small space between each Atari Special Character for easier reading. Immediately below you will see the way **Antic** prints all the standard Atari letters and numbers, in upper and lower case, in normal and inverse video.

ABCDEFGHIJKLMNOPQRSTUVWXYZ
ABCDEFGHIJKLMNOPQRSTUVWXYZ
abcdefghijklmnopqrstuvwxyz
abcdefghijklmnopqrstuvwxyz
0123456789 0123456789

The Atari Special Characters and the keys you must type in order to get them are shown in the two boxes below.

**NORMAL VIDEO**

| FOR THIS | TYPE THIS | FOR THIS | TYPE THIS |
|---|---|---|---|
| | CTRL , | | CTRL S |
| | CTRL A | | CTRL T |
| | CTRL B | | CTRL U |
| | CTRL C | | CTRL V |
| | CTRL D | | CTRL W |
| | CTRL E | | CTRL X |
| | CTRL F | | CTRL Y |
| | CTRL G | | CTRL Z |
| | CTRL H | | ESC ESC |
| | CTRL I | | ESC CTRL − |
| | CTRL J | | ESC CTRL = |
| | CTRL K | | ESC CTRL + |
| | CTRL L | | ESC CTRL * |
| | CTRL M | | CTRL . |
| | CTRL N | | CTRL ; |
| | CTRL O | | SHIFT = |
| | CTRL P | | ESC SHIFT CLEAR |
| | CTRL Q | | ESC DELETE |
| | CTRL R | | ESC TAB |

**INVERSE VIDEO**

| FOR THIS | TYPE THIS | FOR THIS | TYPE THIS |
|---|---|---|---|
| | 人 CTRL , | | CTRL X |
| | 人 CTRL A | | CTRL Y |
| | 人 CTRL B | | CTRL Z |
| | 人 CTRL C | | ESC SHIFT DELETE |
| | 人 CTRL D | | ESC SHIFT INSERT |
| | 人 CTRL E | | ESC CTRL TAB |
| | 人 CTRL F | | ESC SHIFT TAB |
| | 人 CTRL G | | 人 CTRL . |
| | 人 CTRL H | | 人 CTRL ; |
| | 人 CTRL I | | 人 SHIFT = |
| | 人 CTRL J | | ESC CTRL 2 |
| | 人 CTRL K | | ESC CTRL DELETE |
| | 人 CTRL L | | ESC CTRL INSERT |
| | 人 CTRL M | | |
| | 人 CTRL N | | |
| | 人 CTRL O | | |
| | 人 CTRL P | | |
| | 人 CTRL Q | | |
| | 人 CTRL R | | |
| | 人 CTRL S | | |
| | 人 CTRL T | | |
| | 人 CTRL U | | |
| | 人 CTRL V | | |
| | 人 CTRL W | | |

Whenever the CONTROL key (CTRL on the 400/800) or SHIFT key is used, *hold it down* while you press the next key. Whenever the ESC key is pressed, *release* it before you type the next key.

Turn on inverse video by pressing the Reverse Video Mode Key . Turn it off by pressing it a second time. (On the 400/800, use the Atari Logo Key 人 instead.)

Among the most common program typing mistakes are switching certain capital letters with their lower-case counterparts—you need to look especially carefully at P, X, O and 0 (zero).

Some of Atari Special Characters are not easy to tell apart from standard alpha-numeric characters. Usually the Special Characters will be boxed. Compare the two sets of characters below:

| SPECIAL | | | STANDARD | | |
|---|---|---|---|---|---|
| | | CTRL F | / | | / |
| | | CTRL G | \ | | SHIFT + |
| | | CTRL N | _ | | SHIFT − |
| | | CTRL R | - | | − |
| | | CTRL S | + | | + |

# HOW TO USE TYPO II (8-BIT)

TYPO II automatically proofreads **Antic**'s type-in BASIC listings for 8-bit Atari computers. It finds the exact line where you made a program typing mistake.

Type in TYPO II and SAVE a copy to disk or cassette. Now type GOTO 32000. When you see the instruction on the screen, type in a single program line **without the two-letter TYPO II code** at the left of the line number. Press the [RETURN] key.

Your line will reappear at the bottom of the screen with a two-letter TYPO II code on the left. If this code is not exactly the same as the line code printed in the magazine, you mistyped something in that line.

To call back any line previously typed, type an asterisk [*] followed (without in-between spaces) by the line number, then press [RETURN]. When the complete line appears at the top of the screen, press [RETURN] again. This is also the way you use TYPO II to proofread itself.

To LIST your program, press [BREAK] and type LIST. To return to TYPO II, type GOTO 32000.

To remove TYPO II from your program, type LIST "D:FILENAME",0,31999 [RETURN] (Cassette owners LIST "C:). Type NEW, then ENTER "D:FILENAME"[RETURN](Cassette—ENTER "C:). Your program is now in memory without TYPO II and you can SAVE or LIST it to disk or cassette.

Don't type the TYPO II Codes!

```
WB 32000 REM TYPO II BY ANDY BARTON
VM 32010 REM VER. 1.0 FOR ANTIC MAGAZINE
HS 32020 CLR :DIM LINE$(120):CLOSE #2:CLO
   SE #3
BN 32030 OPEN #2,4,0,"E":OPEN #3,5,0,"E"
YC 32040 ? "↖":POSITION 11,1:? "TYPO II"
EM 32050 TRAP 32040:POSITION 2,3:? "Type
   in a program line"
HS 32060 POSITION 1,4:? " ":INPUT #2;LINE
   $:IF LINE$="" THEN POSITION 2,4:LIST B
   :GOTO 32060
XH 32070 IF LINE$(1,1)="*" THEN B=VAL(LIN
   E$(2,LEN(LINE$))):POSITION 2,4:LIST B:
   GOTO 32060
TH 32080 POSITION 2,10:? "CONT"
MF 32090 B=VAL(LINE$):POSITION 1,3:? " ";
NY 32100 POKE 842,13:STOP
CN 32110 POKE 842,12
ET 32120 ? "↖":POSITION 11,1:? " TYPO II 
   ":POSITION 2,15:LIST B
CE 32130 C=0:ANS=C
QR 32140 POSITION 2,16:INPUT #3;LINE$:IF
   LINE$="" THEN ? "LINE ";B;" DELETED":G
   OTO 32050
VV 32150 FOR D=1 TO LEN(LINE$):C=C+1:ANS=
   ANS+(C*ASC(LINE$(D,D))):NEXT D
WJ 32160 CODE=INT(ANS/676)
JW 32170 CODE=ANS-(CODE*676)
EH 32180 HCODE=INT(CODE/26)
BH 32190 LCODE=CODE-(HCODE*26)+65
HB 32200 HCODE=HCODE+65
IE 32210 POSITION 0,16:? CHR$(HCODE);CHR$
   (LCODE)
VG 32220 POSITION 2,13:? "If CODE does no
   t match press  RETURN  and edit line a
   bove.":GOTO 32050
```

---

fractal "arrowhead" power display

# SIERPINSKI CURVES

Article on page 19

## LISTING 1

Don't type the TYPO II Codes!

```
AE 4 REM SIERPINSKI CURVES
KR 8 REM BY ALLAN SHARPE
ZQ 11 REM FROM PAGE 6 MAGAZINE
RI 15 DIM ST(5):F=0
TU 45 GRAPHICS 7+16:POKE 708,56
JQ 50 FOR Z=1 TO 4
DL 55 C=C+1:IF C>3 THEN C=1
GH 56 COLOR C
HL 57 IF F=1 THEN COLOR 0
OK 61 GOSUB 100
OV 62 NEXT Z
JO 70 IF F=0 THEN COLOR 0:F=1:GOTO 50
YX 90 END
CG 100 H0=96:H=H0/4:X=3.3*H:Y=3*H:I=0
XE 110 I=I+1:X=X-H:H=H/2:Y=Y+H
ZG 120 IF I<Z THEN GOTO 110
NE 130 PS=I:GOSUB 600
OX 140 GOSUB 200:A=H:B=-H:GOSUB 800
FH 150 GOSUB 300:A=-H:B=-H:GOSUB 800
SW 160 GOSUB 400:A=-H:B=H:GOSUB 800
FF 170 GOSUB 500:A=H:B=H:GOSUB 800
KI 180 GOSUB 700:RETURN
PE 200 IF TP<=0 THEN RETURN
YG 220 PS=TP-1:GOSUB 600
OW 230 GOSUB 200:A=H:B=-H:GOSUB 800
OE 240 GOSUB 300:A=2*H:B=0:GOSUB 800
FC 250 GOSUB 500:A=H:B=H:GOSUB 800
RK 260 GOSUB 200
KH 270 GOSUB 700:RETURN
PF 300 IF TP<=0 THEN RETURN
YH 320 PS=TP-1:GOSUB 600
FF 330 GOSUB 300:A=-H:B=-H:GOSUB 800
DH 340 GOSUB 400:A=0:B=-2*H:GOSUB 800
PB 350 GOSUB 200:A=H:B=-H:GOSUB 800
RW 360 GOSUB 300
KI 370 GOSUB 700:RETURN
PG 400 IF TP<=0 THEN RETURN
YI 420 PS=TP-1:GOSUB 600
ST 430 GOSUB 400:A=-H:B=H:GOSUB 800
FW 440 GOSUB 500:A=-2*H:B=0:GOSUB 800
FK 450 GOSUB 300:A=-H:B=-H:GOSUB 800
SI 460 GOSUB 400
KJ 470 GOSUB 700:RETURN
PH 500 IF TP<=0 THEN RETURN
YJ 520 PS=TP-1:GOSUB 600
FB 530 GOSUB 500:A=H:B=H:GOSUB 800
NU 540 GOSUB 200:A=0:B=2*H:GOSUB 800
SY 550 GOSUB 400:A=-H:B=H:GOSUB 800
SU 560 GOSUB 500
KK 570 GOSUB 700:RETURN
BO 600 SP=SP+1:ST(SP)=PS:TP=PS:RETURN
WR 700 SP=SP-1:TP=ST(SP):RETURN
RZ 800 PLOT X,Y:DRAWTO X+A,Y+B
UV 820 X=X+A:Y=Y+B:RETURN
```

atari moviemaking was never easier

# MEGANIMATOR

Article on page 33

## LISTING 1

Don't type the TYPO II Codes!

```
UY 10 REM MEG-ANIMATOR, LISTING ONE
GU 11 REM BLKED.BAS
ZI 20 REM BY JACOB DONHAM
PT 30 REM (c)1987, ANTIC PUBLISHING
EU 50 POKE 106,152:PM=152:CH=156:GRAPHICS 0:POKE 710,0:POKE 752,1:PMB=PM*256:CHB=CH*256
OK 60 A=PEEK(89):B=PEEK(88):POKE 88,0:FOR I=152 TO 160:POKE 89,I:? "▣":NEXT I:POKE 89,A:POKE 88,B
BF 70 DIM BT(8),PW(7),PL(7),A$(17),F$(8),FN$(15):FOR I=0 TO 7:READ A:PW(I)=A:NEXT I:DATA 1,2,4,8,16,32,64,128
NE 80 GOSUB 3000
CL 90 OPEN #3,4,0,"K:"
VN 100 ? "                ■■Block■Editor■■"
CT 105 ?
ZZ 110 ? "                1 Edit Block Set"
UC 120 ? "                2 Load Block Set"
HP 130 ? "                3 Save Block Set"
YN 140 ? "                4 Quit"
SL 150 GET #3,K:TRAP 210
DB 160 IF K=ASC("1") THEN 1000
EQ 170 IF K=ASC("2") THEN 2000
KC 180 IF K=ASC("3") THEN 2500
WU 190 IF K=ASC("4") THEN RUN "D:MEGMATOR.BAS"
NK 200 GOTO 150
VX 210 POSITION 12,7:PRINT "■■Disk■Error!■■"
KJ 220 GET #3,K:POSITION 12,7:? "               ":GOTO 150
SD 1000 ? "▣":GOSUB 3050:DL=PEEK(560)+256*PEEK(561):POKE DL+27,65:POKE DL+28,32:POKE DL+29,156
UZ 1001 POKE DL+3,71:POKE DL+6,7:POKE DL+7,7:POKE DL+8,135
TU 1005 POKE 756,CH:POKE 53277,3
HK 1010 POKE 54286,192:DM=PEEK(DL+4)+256*PEEK(DL+5):FOR I=0 TO 3:FOR J=0 TO 15:POKE DM+(I*20)+J+2,I*16+J:NEXT J
WW 1020 NEXT I:ZM=DM+80:ZMH=INT(ZM/256):ZML=ZM-256*ZMH:POKE 88,ZML:POKE 89,ZMH
HO 1025 ? #6;"  ┌──────────┐"
UY 1030 ? #6;"  │          │    1 Edit Block"
OV 1040 ? #6;"  │          │    2 Clear Block"
YM 1050 ? #6;"  │          │    3 Reverse Block"
TC 1060 ? #6;"  │          │    4 Scroll Up"
GZ 1070 ? #6;"  │          │    5 Scroll Down"
OI 1080 ? #6;"  │          │    6 Scroll Right"
PW 1090 ? #6;"  │          │    7 Scroll Left"
XT 1100 ? #6;"  │          │    8 Return"
JV 1110 ? #6;"  └──────────┘"
HS 1120 GET #3,K
XW 1130 IF K>56 OR K<49 THEN 1120
US 1140 ON K-48 GOTO 1200,1700,1750,1800,1850,1900,1950,1390
NM 1150 ON K-48 GOTO 1200,1700,1750,1800,1850,1900,1950
SY 1200 X=64:Y=16:CHR=0:OY=16:POKE 53277,3
ED 1210 POKE 53248,X:IF Y<>OY THEN FOR I=OY TO OY+7:POKE P0+I,0:NEXT I
LU 1220 FOR I=Y TO Y+7:POKE P0+I,PL(I-Y):NEXT I
PK 1230 OY=Y:ST=STICK(0):IF ST=14 AND Y>23 THEN Y=Y-8:CHR=CHR-16
SA 1240 IF ST=13 AND Y<33 THEN Y=Y+8:CHR=CHR+16
JM 1250 IF ST=11 AND X>71 THEN X=X-8:CHR=CHR-1
HD 1260 IF ST=7 AND X<177 THEN X=X+8:CHR=CHR+1
DD 1270 IF STRIG(0)=1 THEN 1210
IR 1275 FOR I=OY TO OY+7:POKE P0+I,0:NEXT I
FO 1280 POKE 53249,68:FOR I=0 TO 7:FOR J=0 TO 3:POKE P1+56+(I*4)+J,PEEK(CHB+(CHR*8)+I):NEXT J:NEXT I
KN 1290 X=5:Y=2:OX=5:OY=2
HZ 1300 IF OX<>X OR OY<>Y THEN POSITION OX,OY:? " "
MV 1305 POSITION X,Y:? "+":FOR I=0 TO 6:NEXT I
BQ 1310 OX=X:OY=Y:ST=STICK(0):IF ST=14 AND Y>2 THEN Y=Y-1
HU 1320 IF ST=13 AND Y<9 THEN Y=Y+1
EQ 1330 IF ST=11 AND X>5 THEN X=X-1
YC 1340 IF ST=7 AND X<12 THEN X=X+1
TE 1350 IF PEEK(764)<>255 THEN POSITION X,Y:? " ":GOTO 1120
DB 1360 IF STRIG(0)=1 THEN 1300
HY 1370 IN=PEEK(CHB+(CHR*8)+(Y-2)):BT=X-4:GOSUB 1650:POKE CHB+(CHR*8)+(Y-2),OT:FOR I=0 TO 3
OZ 1380 POKE P1+60+((Y-3)*4)+I,OT:NEXT I:GOTO 1300
MI 1390 GRAPHICS 0:POKE 752,1:POKE 710,0:POKE 53248,0:POKE 53249,0:GOTO 100
NG 1650 FOR I=1 TO 8:BT(I)=0:NEXT I
FH 1652 A=IN:FOR I=1 TO 8:M=8-I:N=PW(M):IF A>N-1 THEN BT(I)=1:A=A-N
GC 1653 NEXT I
HM 1654 IF BT(BT)=1 THEN BT(BT)=0:GOTO 1658
IS 1656 IF BT(BT)=0 THEN BT(BT)=1
UK 1658 FOR I=1 TO 8:M=8-I:N=PW(M):A=A+BT(I)*N:NEXT I:OT=A:RETURN
JO 1700 FOR I=0 TO 7:POKE CHB+(CHR*8)+I,0:NEXT I:GOTO 1280
SO 1750 FOR I=0 TO 7:POKE CHB+(CHR*8)+I,255-PEEK(CHB+(CHR*8)+I):NEXT I:GOTO 1280
RB 1800 FOR I=0 TO 6:POKE CHB+(CHR*8)+I,PEEK(CHB+(CHR*8)+I+1):NEXT I:POKE CHB+(CHR*8)+7,0:GOTO 1280
QK 1850 FOR I=7 TO 0 STEP -1:POKE CHB+(CHR*8)+I,PEEK(CHB+(CHR*8)+I-1):NEXT I:POKE CHB+(CHR*8),0:GOTO 1280
LL 1900 FOR I=0 TO 7:POKE CHB+(CHR*8)+I,INT(PEEK(CHB+(CHR*8)+I)/2):NEXT I:GOTO 1280
IW 1950 FOR I=0 TO 7:J=PEEK(CHB+(CHR*8)+I)*2:IF J>255 THEN J=J-255
ZN 1960 POKE CHB+(CHR*8)+I,J:NEXT I:GOTO 1280
VK 2000 ? "▣":? :? :? "                1 Directory":? "                2 Load Block Set":? "                3 Return"
HO 2010 GET #3,K
QB 2020 IF K=ASC("1") THEN GOSUB 2060:GOTO 2000
LO 2030 IF K=ASC("2") THEN 2100
QF 2040 IF K=ASC("3") THEN ? "▣":GOTO 100
OC 2050 GOTO 2010
LC 2060 ? "▣":? "                ■■■■Directory■■■■":OPEN #2,6,0,"D:*.SET":TRAP 2080
LH 2070 INPUT #2,A$:? "                ";A$:GOTO 2070
AH 2080 CLOSE #2:GET #3,K:RETURN
CF 2100 F$="        ":FN$="D:":TRAP 2110
DQ 2110 ? "▣":? :? :? "                File to Load";:INPUT F$:FN$(3,LEN(F$)+2)=F$:FN$(LEN(F$)+3,LEN(F$)+6)=".SET"
JO 2120 TRAP 2140:OPEN #1,4,0,FN$:POKE 852,0:POKE 853,CH:POKE 856,0:POKE 857,2:POKE 850,7
PJ 2130 A=USR(ADR("hhh▣LV▣"),16):CLOSE #1:GOSUB 3000:GOTO 2000
HC 2140 CLOSE #1:? :? "                Disk Error - ";PEEK(195):GET #3,K:GOSUB 3000:GOTO 2000
FA 2500 ? "▣":? :? :? "                1 Direct
```

```
   ory":? "              2 Save Block Set":?
   "             3 Return"
HY 2510 GET #3,K
YN 2520 IF K=ASC("1") THEN GOSUB 2060:GOT
   O 2500
QY 2530 IF K=ASC("2") THEN 2600
QP 2540 IF K=ASC("3") THEN ? "▣":GOTO 100

QU 2550 GOTO 2510
JI 2600 F$="          ":FN$="D:":TRAP 2610
AO 2610 ? "▣":? :? :? "            File to Sa
   ve";:INPUT F$:FN$(3,LEN(F$)+2)=F$:FN$(
   LEN(F$)+3,LEN(F$)+6)=".SET"
EB 2620 TRAP 2640:OPEN #1,8,0,FN$:POKE 85
   2,0:POKE 853,CH:POKE 856,0:POKE 857,2:
   POKE 850,11
AS 2630 A=USR(ADR("hhh▣LV▣"),16):CLOSE #1
   :GOSUB 3000:GOTO 2500
WR 2640 CLOSE #1:? :? "            Disk Error
   - ";PEEK(195):GET #3,K:GOSUB 3000:GOTO
    2500
HR 2999 END
LT 3000 RESTORE 3015
ZN 3010 FOR I=0 TO 10:READ J:POKE 1536+I,
   J:NEXT I:POKE 512,0:POKE 513,6
TT 3015 DATA 72,169,224,141,10,212,141,9,
   212,104,64
AH 3020 RETURN
AF 3050 POKE 54279,PM:POKE 559,46:POKE 53
   256,0:POKE 53257,3:POKE 53258,1:POKE 7
   04,26:POKE 705,20:POKE 706,0
FJ 3060 POKE 707,0:POKE 53259,1:P0=PMB+51
   2:P1=PMB+640:P2=PMB+768:P3=PMB+896:POK
   E 53277,0
JQ 3080 RESTORE 3085:FOR I=0 TO 7:READ J:
   PL(I)=J:NEXT I
OJ 3085 DATA 255,129,129,129,129,129,129,
   255
BC 3090 RETURN
```

# LISTING 2

```
XT 10 REM MEG-ANIMATOR, LISTING TWO
KW 11 REM FRMED.BAS
ZI 20 REM BY JACOB DONHAM
PT 30 REM (c)1987, ANTIC PUBLISHING
PN 50 POKE 106,88:PM=88:CH=92:SB=96:GRAPH
   ICS 0:POKE 710,0:POKE 752,1:PMB=PM*256
   :CHB=CH*256
KK 60 A=PEEK(89):B=PEEK(88):POKE 88,0:FOR
    I=88 TO 160:POKE 89,I:? "▣":NEXT I:PO
   KE 89,A:POKE 88,B
DO 70 DIM PL(7),CT(19,11),A$(17),F$(8),FN
   $(15)
EW 75 FOR I=96 TO 160:X=I*256+244:POKE X+
   5,10:NEXT I
NE 80 GOSUB 3000
CL 90 OPEN #3,4,0,"K:"
UX 100 ? "                ■■Frame Editor■■"
CT 105 ?
GS 110 ? "                1 Edit Frames"
AV 120 ? "                2 Load Frames"
OI 130 ? "                3 Save Frames"
VQ 140 ? "                4 Load Block Set"
ZU 145 ? "                5 Quit"
HL 150 GET #3,K
DB 160 IF K=ASC("1") THEN 1000
JL 170 IF K=ASC("2") THEN 2500
MZ 180 IF K=ASC("3") THEN 2800
GL 185 IF K=ASC("4") THEN 2000
XJ 190 IF K=ASC("5") THEN RUN "D:MEGMATOR
   .BAS"
NK 200 GOTO 150
TP 210 POSITION 12,7:? "■■Disk Error!■■"
KJ 220 GET #3,K:POSITION 12,7:? "
        ":GOTO 150
SD 1000 ? "▣":GOSUB 3050:DL=PEEK(560)+256
   *PEEK(561):POKE DL+27,65:POKE DL+28,32
   :POKE DL+29,156
UZ 1001 POKE DL+3,71:POKE DL+6,7:POKE DL+
   7,7:POKE DL+8,135
TU 1005 POKE 756,CH:POKE 53277,3
HK 1010 POKE 54286,192:DM=PEEK(DL+4)+256*
   PEEK(DL+5):FOR I=0 TO 3:FOR J=0 TO 15:
   POKE DM+(I*20)+J+2,I*16+J:NEXT J
WW 1020 NEXT I:ZM=DM+80:ZMH=INT(ZM/256):Z
   ML=ZM-256*ZMH:POKE 88,ZML:POKE 89,ZMH
HX 1030 ? #6;"              1 Change Frame"
IW 1040 ? #6;"  Frame       2 Clear Frame"
KI 1050 ? #6;"              3 Color"
PI 1060 ? #6;"     ";SC,"4 Copy From"
GP 1070 ? #6;"              5 Parameters"
AI 1075 ? #6;"              6 Return"
OK 1080 GOTO 1200
HS 1120 GET #3,K
VU 1130 IF K>54 OR K<49 THEN 1200
SI 1140 ON K-48 GOTO 1510,1530,1540,1600,
   1700,1390
SY 1200 X=64:Y=16:CHR=0:OY=16:POKE 53277,
   3
ED 1210 POKE 53248,X:IF Y<>OY THEN FOR I=
   OY TO OY+7:POKE P0+I,0:NEXT I
LU 1220 FOR I=Y TO Y+7:POKE P0+I,PL(I-Y):
   NEXT I
PK 1230 OY=Y:ST=STICK(0):IF ST=14 AND Y>2
   3 THEN Y=Y-8:CHR=CHR-16
SA 1240 IF ST=13 AND Y<33 THEN Y=Y+8:CHR=
   CHR+16
JM 1250 IF ST=11 AND X>71 THEN X=X-8:CHR=
   CHR-1
HD 1260 IF ST=7 AND X<177 THEN X=X+8:CHR=
   CHR+1
GM 1265 IF PEEK(764)<>255 THEN FOR I=Y TO
    Y+7:POKE P0+I,0:NEXT I:GOTO 1120
DD 1270 IF STRIG(0)=1 THEN 1210
IR 1275 FOR I=OY TO OY+7:POKE P0+I,0:NEXT
    I
CV 1290 GRAPHICS 18:GOSUB 3050:POKE 756,C
   H:POKE 53277,3:POKE 53249,0:POKE 53250
   ,0:POKE 53251,0
PH 1293 POKE 88,0:POKE 89,SB+SC:DL=PEEK(5
   60)+256*PEEK(561):POKE DL+4,0:POKE DL+
   5,SB+SC
FM 1295 X=48:Y=16:B=0:OY=16
DB 1300 IF OY<>Y THEN FOR I=OY TO OY+7:PO
   KE P0+I,0:NEXT I
IY 1305 POKE 53248,X:FOR I=Y TO Y+7:POKE
   P0+I,PL(I-Y):NEXT I
LS 1310 OY=Y:ST=STICK(0):IF ST=14 AND Y>2
   3 THEN Y=Y-8:B=B-20
UV 1320 IF ST=13 AND Y<97 THEN Y=Y+8:B=B+
   20
VO 1330 IF ST=11 AND X>55 THEN X=X-8:B=B-
   1
PZ 1340 IF ST=7 AND X<193 THEN X=X+8:B=B+
   1
DA 1350 IF PEEK(764)<>255 THEN GET #3,K:G
   OTO 1400
DB 1360 IF STRIG(0)=1 THEN 1300
WH 1370 POKE (SC+SB)*256+B,CHR+C:GOTO 130
   0
MM 1390 GRAPHICS 0:POKE 752,1:POKE 710,0:
   POKE 53248,0:GOTO 100
TF 1400 GRAPHICS 0:POKE 752,1:POKE 710,0:
   FOR I=Y TO Y+7:POKE P0+I,0:NEXT I:GOTO
    1000
EZ 1510 GRAPHICS 0:POKE 752,1:POKE 710,0:
   POKE 53248,0
NQ 1520 ? "▣":? :? :? "            Which Fram
   e";:TRAP 1000:INPUT S:IF S>-1 AND S<64
    THEN SC=S:GOTO 1000
LZ 1530 GRAPHICS 18:POKE 88,0:POKE 89,SB+
   SC:PRINT #6;"▣":GOTO 1290
VM 1540 GRAPHICS 0:POKE 53277,0:POKE 752,
   1:POKE 710,0:? :? :? "        Which Co
   lor";:TRAP 1000:INPUT C
XS 1550 IF C<1 OR C>4 THEN 1540
NJ 1560 C=(C-1)*64:GOTO 1000
DL 1600 GRAPHICS 0:POKE 752,1:POKE 710,0:
   POKE 53248,0:? :? :? "           Frame
   to Copy From";:TRAP 1000
TY 1605 INPUT S
TT 1610 IF S>-1 AND S<64 THEN ? :? "
    Copying Frame ";S;" to Frame ";SC
MA 1620 FOR I=0 TO 239:POKE (SB+SC)*256+I
   ,PEEK((SB+S)*256+I):NEXT I:GOTO 1000
FA 1700 GRAPHICS 0:POKE 752,1:POKE 710,0:
   POKE 53248,0
GU 1710 ? :? :? "              1 Sound"
QT 1730 ? "              2 Block Set"
YR 1740 ? "              3 Delay"
KY 1750 ? "              4 Return"
IQ 1760 GET #3,K
UA 1770 IF K=ASC("1") THEN 1820
BC 1790 IF K=ASC("2") THEN 1880
TL 1800 IF K=ASC("3") THEN 1900
LE 1810 IF K=ASC("4") THEN 1000
UH 1815 GOTO 1760
WF 1820 ? "▣":? :FOR I=0 TO 3
QY 1825 ? "         Tone For Voice ";I+1;:
   TRAP 1825:INPUT TN:IF TN<0 OR TN>255 T
   HEN 1825
FH 1830 POKE (SB+SC)*256+240+I,TN:NEXT I:
   GOTO 1700
WO 1850 ? "▣":? :FOR I=0 TO 3
DD 1855 ? "         Color ";I+1;:TRAP 1855
   :INPUT CL:IF CL<0 OR CL>255 THEN 1855
OF 1860 POKE (SB+SC)*256+244+I,CL:NEXT I:
```

continued on next page

```
   GOTO 1700
NU 1880 ? "K":?
MB 1885 ? "      Block Set";:TRAP 1885:
   INPUT BS:IF BS<1 OR BS>8 THEN 1885
NA 1890 POKE (SB+SC)*256+248,BS-1:GOTO 17
   00
MY 1900 ? "K":?
CN 1915 ? "         Delay";:TRAP 1915:INPU
   T DL:IF DL<0 OR DL>255 THEN 1915
KR 1920 POKE (SB+SC)*256+249,DL:GOTO 1700

HQ 1999 END
VK 2000 ? "K":? :? :? "         1 Direct
   ory":? "         2 Load Block Set":?
   "         3 Return"
HO 2010 GET #3,K
QB 2020 IF K=ASC("1") THEN GOSUB 2060:GOT
   O 2000
LO 2030 IF K=ASC("2") THEN 2100
QF 2040 IF K=ASC("3") THEN ? "K":GOTO 100

OC 2050 GOTO 2010
LC 2060 ? "K":? "              Directory
   ":OPEN #2,6,0,"D:*.SET":TRAP 2080
LH 2070 INPUT #2,A$:? "        ";A$:GOT
   O 2070
AH 2080 CLOSE #2:GET #3,K:RETURN
ZT 2100 F$="        ":FN$="D:":GOSUB 3100
   :TRAP 2110
DQ 2110 ? "K":? :? :? "         File to Lo
   ad";:INPUT F$:FN$(3,LEN(F$)+2)=F$:FN$(
   LEN(F$)+3,LEN(F$)+6)=".SET"
KJ 2120 TRAP 2140:OPEN #1,4,0,FN$:POKE 85
   2,0:POKE 853,CH:POKE 856,0:POKE 857,2:
   POKE 850,7:A=USR(1536,16)
KW 2130 CLOSE #1:GOSUB 3000:GOTO 2000
HC 2140 CLOSE #1:? :? "         Disk Error
   - ";PEEK(195):GET #3,K:GOSUB 3000:GOTO
    2000
KK 2500 ? "K":? :? :? "         1 Direct
   ory":? "         2 Load Frames":? "
         3 Return"
HY 2510 GET #3,K
ER 2520 IF K=ASC("1") THEN GOSUB 2560:GOT
   O 2500
QY 2530 IF K=ASC("2") THEN 2600
RH 2540 IF K=ASC("3") THEN ? CHR$(125):GO
   TO 100
QU 2550 GOTO 2510
GJ 2560 ? CHR$(125):? "            Dire
   ctory":OPEN #2,6,0,"D:*.FRM":TRAP
   2580
LR 2570 INPUT #2,A$:? "        ";A$:GOT
   O 2070
AR 2580 CLOSE #2:GET #3,K:RETURN
IZ 2600 F$="        ":FN$="D:":GOSUB 3100
   :TRAP 2610
OU 2610 ? CHR$(125):? :? :? "         File
    to Load";:INPUT F$:FN$(3,LEN(F$)+2)=F
   $:FN$(LEN(F$)+3,LEN(F$)+6)=".FRM"
UT 2620 TRAP 2640:OPEN #1,4,0,FN$:POKE 85
   2,0:POKE 853,SB:POKE 856,0:POKE 857,64
   :POKE 850,7:A=USR(1536,16)
RK 2630 CLOSE #1:GOSUB 3000:GOTO 2500
WR 2640 CLOSE #1:? :? "         Disk Error
   - ";PEEK(195):GET #3,K:GOSUB 3000:GOTO
    2500
PP 2800 ? CHR$(125):? :? :? "         1
   Directory":? "         2 Save Frames"
   :? "         3 Return"
IE 2810 GET #3,K
JT 2820 IF K=ASC("1") THEN GOSUB 2560:GOT
   O 2800
UE 2830 IF K=ASC("2") THEN 2900
RN 2840 IF K=ASC("3") THEN ? CHR$(125):GO
   TO 100
SK 2850 GOTO 2810
ON 2900 F$="        ":FN$="D:":GOSUB 3100
   :TRAP 2910
PA 2910 ? CHR$(125):? :? :? "         File
    to Save";:INPUT F$:FN$(3,LEN(F$)+2)=F
   $:FN$(LEN(F$)+3,LEN(F$)+6)=".FRM"
XG 2920 TRAP 2940:OPEN #1,8,0,FN$:POKE 85
   2,0:POKE 853,SB:POKE 856,0:POKE 857,64
   :POKE 850,11:A=USR(1536,16)
VI 2930 CLOSE #1:GOSUB 3000:GOTO 2800
GA 2940 CLOSE #1:? :? "         Disk Error
   - ";PEEK(195):GET #3,K:GOSUB 3000:GOTO
    2800
HR 2999 END
LT 3000 RESTORE 3015
ZN 3010 FOR I=0 TO 10:READ J:POKE 1536+I,
   J:NEXT I:POKE 512,0:POKE 513,6
FP 3015 DATA 72,169,224,141,10,212,141,9,
   212,104,64,0,0,0,0,0,0,0,0
AH 3020 RETURN
AF 3050 POKE 54279,PM:POKE 559,46:POKE 53
   256,0:POKE 53257,3:POKE 53258,1:POKE 7
   04,26:POKE 705,20:POKE 706,0
FJ 3060 POKE 707,0:POKE 53259,1:P0=PMB+51
   2:P1=PMB+640:P2=PMB+768:P3=PMB+896:POK
   E 53277,0
JQ 3080 RESTORE 3085:FOR I=0 TO 7:READ J:
   PL(I)=J:NEXT I
OJ 3085 DATA 255,129,129,129,129,129,129,
   255
BC 3090 RETURN
MK 3100 RESTORE 3115
EX 3110 FOR I=0 TO 6:READ J:POKE 1536+I,J
   :NEXT I
AJ 3115 DATA 104,104,104,170,76,86,228
AJ 3120 RETURN
```

# LISTING 3

```
FJ 10 REM MEG-ANIMATOR, LISTING THREE
PL 11 REM MOVED.BAS
ZI 20 REM BY JACOB DONHAM
PT 30 REM (c)1987, ANTIC PUBLISHING
VN 90 GRAPHICS 0:POKE 752,1:POKE 710,0:OP
   EN #3,4,0,"K:":DIM F$(8),FN$(14),T$(40
   )
MC 100 ? "            Movie Editor  "
CT 105 ?
CE 110 ? "         1 Create Movie"
WZ 120 ? "         2 Quit"
WE 130 GET #3,K:TRAP 170
CX 140 IF K=ASC("1") THEN 1000
VI 150 IF K=ASC("2") THEN RUN "D:MEGMATOR
   .BAS"
MZ 160 GOTO 130
GU 170 POSITION 2,5:? "          Disk E
   rror!   ":GET #3,K:POSITION 2,5:? "
                  ":GOTO 130
MG 1000 ? "K":?
TJ 1010 ? "      Movie Filename";:TRAP 10
   10:INPUT F$:FN$="D:":FN$(3,3+LEN(F$))=
   F$(1,LEN(F$))
BG 1020 FN$(3+LEN(F$),6+LEN(F$))=".MOV":T
   RAP 2000:OPEN #2,8,0,FN$
DN 1025 ? "      Title";:TRAP 1135:INPUT
   T$:TRAP 2000:? #2;T$
UM 1030 ? "      How Many Block Sets";:TR
   AP 1030:INPUT BS:IF BS<1 OR BS>8 THEN
   1030
GI 1040 TRAP 2000:? #2;BS:FOR I=1 TO BS
TQ 1050 ? "      Filename For Set ";I;:TR
   AP 1050:INPUT F$:FN$="D:":FN$(3,3+LEN(
   F$))=F$(1,LEN(F$))
BL 1060 FN$(3+LEN(F$),6+LEN(F$))=".SET":T
   RAP 2000:? #2;FN$
FK 1070 NEXT I
MR 1080 ? "      How Many Frames";:TRAP 1
   080:INPUT FR:IF FR<1 OR FR>104 THEN 10
   80
ZO 1090 TRAP 2000:? #2;FR
SX 1100 ? "      Filename For 1st Frames"
   ;:TRAP 1100:INPUT F$:FN$="D:":FN$(3,3+
   LEN(F$))=F$(1,LEN(F$))
SA 1110 FN$(3+LEN(F$),6+LEN(F$))=".FRM":T
   RAP 2000:? #2;FN$
BZ 1115 IF FR<65 THEN 1140
ZW 1120 ? "      Filename For 2nd Frames"
   ;:TRAP 1120:INPUT F$:FN$="D:":FN$(3,3+
   LEN(F$))=F$(1,LEN(F$))
SG 1130 FN$(3+LEN(F$),6+LEN(F$))=".FRM":T
   RAP 2000:? #2;FN$
GK 1140 CLOSE #2:? :? "          Movie Crea
   ted!  ":GET #3,K:? "K";:GOTO 100
TR 2000 CLOSE #2:? :? "      Error- ";PEE
   K(195):GET #3,K:? "K";:GOTO 100
```

# LISTING 4

```
FN 10 REM MEG-ANIMATOR, LISTING FOUR
XU 11 REM MOVPL.BAS
ZI 20 REM BY JACOB DONHAM
VW 30 REM (c)1987, ANTIC
QL 90 POKE 106,40:CB=40:SB=56:GRAPHICS 0:
   POKE 752,1:POKE 710,0:DIM F$(8),FN$(20
   )
GZ 100 ? "KK      Movie Filename";:TRAP 1
   00:INPUT F$:FN$="D:":FN$(3,3+LEN(F$))=
   F$(1,LEN(F$))
SE 110 FN$(3+LEN(F$),6+LEN(F$))=".MOV":TR
   AP 1990:OPEN #2,4,0,FN$
```

```
NE  115 INPUT #2,FN$:GRAPHICS 18:? #6:? #6
    :? #6:? #6;FN$
LA  120 INPUT #2,BS:FOR I=1 TO BS:INPUT #2
    ,FN$:WH=CB+2*(I-1):HM=2:GOSUB 4000:NEX
    T I
BK  130 INPUT #2,FR:INPUT #2,FN$:WH=SB:HM=
    64:GOSUB 4000:IF FR>64 THEN INPUT #2,F
    N$:WH=SB+64:HM=40:GOSUB 4000:CLOSE #2
NX  140 DL=PEEK(560)+256*PEEK(561):FRM=1:P
    OKE DL+4,0:POKE 756,CB
XA  150 POKE DL+5,SB+FRM-1:X=(SB+FRM-1)*25
    6:POKE 756,CB+(PEEK(X+248)*2):FOR I=0
    TO 3:SOUND I,PEEK(X+240+I),10,10
JL  160 NEXT I:POKE 540,PEEK(X+249)
KW  170 IF PEEK(540)>0 THEN 170
BG  180 IF FRM<FR THEN FRM=FRM+1:GOTO 150
OI  190 END
OP  1990 CLOSE #2
KC  2000 ? "⊞          Error- ";PEEK(195)
QX  2010 IF PEEK(764)=255 THEN 2010
BG  2020 POKE 764,255:? "■";:GOTO 100
YF  4000 TRAP 4020:OPEN #1,4,0,FN$:POKE 85
    2,0:POKE 853,WH:POKE 856,0:POKE 857,HM
    :POKE 850,7
JU  4010 A=USR(ADR("hhh⊠LV◘"),16):CLOSE #1
    :RETURN
KV  4020 CLOSE #1:GOTO 2000
```

## LISTING 5

```
JC  10 REM MEG-ANIMATOR, LISTING FIVE
OB  11 REM MEGMATOR.BAS
ZI  20 REM BY JACOB DONHAM
PT  30 REM (c)1987, ANTIC PUBLISHING
XX  50 GRAPHICS 0:POKE 710,0:POKE 752,1
CL  90 OPEN #3,4,0,"K:"
AV  95 ? "              *** MAIN MENU ***":?
OX  100 ? "            ███MegAnimator███"
LB  105 ? "              by Jacob Donham":?
ZZ  110 ? "            1 BLOCK Editor"
AD  120 ? "            2 FRAME Editor"
YW  130 ? "            3 Movie Editor"
EJ  140 ? "            4 Movie Player"
HL  150 GET #3,K
WM  160 IF K=ASC("1") THEN RUN "D:BLKED.BA
    S"
LV  170 IF K=ASC("2") THEN RUN "D:FRMED.BA
    S"
CO  180 IF K=ASC("3") THEN RUN "D:MOVED.BA
    S"
CJ  190 IF K=ASC("4") THEN RUN "D:MOVPL.BA
    S"
NK  200 GOTO 150
```

**most players can't take it for more than 45 seconds**

# CURRENT EVENTS

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## LISTING 1

Don't type the TYPO II Codes!

```
XM  10 REM CURRENT EVENTS
WQ  20 REM BY JAMES HAGUE
PT  30 REM (c)1987, ANTIC PUBLISHING
US  100 BRK=1:IF PEEK(53279)=5 THEN BRK=0
TU  110 GOSUB 9000
JE  120 GOSUB 8000:GOSUB 2000:PL=1
QT  130 PL= NOT PL:IF  NOT PEEK(204) AND
    NOT PEEK(205) THEN GOTO 3000
TA  140 D=USR(JOY,PL):IF  NOT D THEN 180
HA  150 IF D=OPDIR(DIR(PL)) OR D=DIR(PL) T
    HEN 180
LF  160 POS=POS(PL)+ADD(D):IF POS<MIN OR P
    OS>MAX THEN 180
HX  170 A=PEEK(POS):IF A THEN DIR(PL)=D:GO
    TO 210
EF  180 D=DIR(PL):IF  NOT D THEN 130
PB  190 POS=POS(PL)+ADD(D):IF POS<MIN OR P
    OS>MAX THEN DIR(PL)=0:GOTO 130
SY  200 A=PEEK(POS):IF  NOT A THEN DIR(PL)
    =0:GOTO 130
YV  210 IF POS=POS( NOT PL) THEN 1500
RZ  220 IF A=156 OR A=157 THEN 1000
DY  230 SOUND 0,50+X,8,8:POS(PL)=POS:B=YP(
    PL):YP(PL)=YP(PL)+YPA(D):XP(PL)=XP(PL)
    +XPA(D):C=USR(VMOVE,PL,B,YP(PL))
QM  240 POKE 53248+PL,XP(PL):POKE 53761,0:
    IF A=158 THEN 500
LS  250 A=USR(CHOP,A):IF PL THEN A=A+192
GR  260 POKE POS,A:GOTO 130
SA  499 REM EVENT HANDLER
IA  500 A=0:IF PL THEN A=192
QN  510 POKE POS,27+A
TA  520 B=INT(RND(0)*5):IF EVENT(B) THEN 5
    20
KF  530 EVENT(B)=1:ON B+1 GOTO 560,590,600

VI  540 A=0:IF B=4 THEN A=192
QF  550 POKE POS-2,7+A:POKE POS-1,7+A:POKE
     POS-20,6+A:POKE POS+1,7+A:POKE POS+2,
    7+A:POKE POS+20,6+A:GOTO 600
EM  560 A=USR(VMOVE,0,YP(0),0):A=USR(VMOVE
    ,1,YP(1),0)
UQ  565 A=DIR(0):DIR(0)=DIR(1):DIR(1)=A:A=
    POS(0):POS(0)=POS(1):POS(1)=A
NU  570 POKE 53248,XP(1):A=USR(VMOVE,0,YP(
    0),YP(1)):POKE 53249,XP(0):A=USR(VMOVE
    ,1,YP(1),YP(0))
MN  580 A=XP(0):XP(0)=XP(1):XP(1)=A:A=YP(0
    ):YP(0)=YP(1):YP(1)=A
ZF  585 POKE POS(0),USR(CHOP,PEEK(POS(0)))
    :POKE POS(1),USR(CHOP,PEEK(POS(1)))+19
    2:GOTO 600
RK  590 POKE 206,104:POKE 207,1:GOTO 130
FG  600 A=1:FOR B=15 TO 0 STEP -1:SOUND 0,
    60,10,B:SOUND 1,45,10,B:GOSUB 7100:NEX
    T B:GOTO 130
LC  999 REM TRANSPORT HANDLER
LC  1000 A=0:IF PL THEN A=192
UN  1010 IF XP(PL)=56 THEN XP(PL)=192:POKE
     53248+PL,192:POKE POS,0:POKE POS+1,12
    +A:POS=POS+18:POKE POS+1,0:GOTO 1030
NX  1020 XP(PL)=56:POKE 53248+PL,56:POKE P
    OS,0:POKE POS-1,13+A:POS=POS-18:POKE P
    OS-1,0
TP  1030 POS(PL)=POS:IF POS=POS( NOT PL) T
    HEN POKE POS,PEEK(POS)-14-(XP(PL)=56):
    GOTO 1500
GT  1040 IF XP(PL)=56 THEN POKE POS,12+A:G
    OTO 1060
CN  1050 POKE POS,13+A
FE  1060 FOR A=3 TO 15:SOUND 0,20,2,A:NEXT
     A:GOTO 130
LL  1499 REM PLAYER COLLISION
KK  1500 FOR A=250 TO 0 STEP -10:POKE 712,
    A/10:SOUND 0,A,8,14:NEXT A
SC  1505 A=USR(VMOVE,0,YP(0),0):A=USR(VMOV
    E,1,YP(1),0)
AC  1510 POS(0)=SCREEN+221:XP(0)=56:POKE 5
    3248,56:A=USR(VMOVE,0,YP(0),208):YP(0)
    =208:POKE POS(0),10
RF  1520 POS(1)=SCREEN+38:XP(1)=192:POKE 5
    3249,192:A=USR(VMOVE,1,YP(1),48):YP(1)
    =48:POKE POS(1),201
KC  1530 DIR(0)=INT(RND(0)*2)+1:DIR(1)=INT
    (RND(0)*2)+3:GOTO 130
LH  1999 REM LEVEL SET-UP
DR  2000 FOR B=201 TO 192 STEP -1:POKE 709
    ,B:A=1:GOSUB 7100:NEXT B:GRAPHICS 18:G
    OSUB 7000:POKE 559,0
WF  2010 POKE 756,CHSET/256:POKE 709,0:POK
    E 710,38:POKE 704,0:POKE 705,0
PW  2015 SCREEN=PEEK(88)+256*PEEK(89):MIN=
    SCREEN+20:MAX=SCREEN+239
TH  2020 A=INT(TIME/60):POKE 205,(A<>0)*A:
    IF A*60=TIME THEN POKE 204,0:GOTO 2040
```

continued on next page

```
ID 2030 A$=STR$(TIME-A*60):POKE 204,VAL(A
   $(1,1))*16+VAL(A$(2))
UD 2040 POKE 206,0:POKE 207,0
DA 2050 POS(0)=SCREEN+221:XP(0)=56:YP(0)=
   208:POS(1)=SCREEN+38:XP(1)=192:YP(1)=4
   8
ZD 2060 FOR A=0 TO 1:POKE 53248+A,XP(A):B
   =USR(VMOVE,A,0,YP(A)):DIR(A)=0:NEXT A
OE 2070 FOR A=0 TO 4:EVENT(A)=0:NEXT A
BL 2080 COLOR 6:PLOT 1,2:DRAWTO 1,10:PLOT
    18,2:DRAWTO 18,10
XC 2090 FOR A=1 TO 11 STEP 2:COLOR 27:PLO
   T 1,A:PLOT 18,A:COLOR 7:PLOT 2,A:DRAWT
   O 17,A:NEXT A
KC 2100 FOR A=5 TO 14 STEP 3:COLOR 14:PLO
   T A,1:COLOR 15:PLOT A,11:COLOR 6:PLOT
   A,2:DRAWTO A,10:COLOR 27:PLOT A,3
XU 2110 PLOT A,5:PLOT A,7:PLOT A,9:NEXT A
   :COLOR 8:PLOT 1,1:COLOR 9:PLOT 18,1
PC 2120 COLOR 10:PLOT 1,11:COLOR 11:PLOT
   18,11
DJ 2130 POKE 53277,2:POKE 559,62
UR 2140 COLOR 190:FOR A=1 TO 5
KL 2150 B=INT(RND(0)*4)*3+5:C=INT(RND(0)*
   4)*2+3:LOCATE B,C,D:IF D=190 THEN 2150

DL 2160 PLOT B,C:FOR B=15 TO 0 STEP -1:SO
   UND 0,100,10,B:NEXT B:NEXT A
CS 2170 FOR B=0 TO 8:POKE 704,128+B:POKE
   705,16+B:A=2:GOSUB 7100:NEXT B
LK 2180 FOR B=0 TO 10:POKE 709,B:GOSUB 71
   00:NEXT B
XS 2190 FOR A=3 TO 9 STEP 2:COLOR 188:PLO
   T 0,A:COLOR 189:PLOT 19,A:NEXT A
ZA 2200 POSITION 5,0:? #6;"time ";:B=160:
   GOSUB 7050:A=40:GOSUB 7100:POSITION 9,
   6:? #6;"GO"
SL 2210 FOR A=1 TO 12:FOR B=15 TO 0 STEP
   -2:SOUND 0,80,10,B:NEXT B:FOR B=15 TO
   0 STEP -2:SOUND 0,50,10,B:NEXT B
UQ 2220 NEXT A:POSITION 9,6:? #6;"  ":COL
   OR 42:PLOT 1,11
RD 2230 COLOR 137:PLOT 18,1:POKE 203,60:S
   OUND 0,0,0,0:RETURN
LG 2999 REM END GAME
YF 3000 POKE 203,255:POKE 709,10:POKE 537
   65,0:POKE 53767,0
CH 3010 FOR A=0 TO 1:B=USR(VMOVE,A,YP(A),
   0):NEXT A:POKE 53277,0
WU 3020 SOUND 0,46,12,14:SOUND 1,48,12,14
   :A=90:GOSUB 7100:POKE 53761,0:POKE 537
   63,0
BC 3030 POSITION 2,0:? #6;"PL1:000  P1";C
   HR$(146);CHR$(154);"000"
SM 3040 COLOR 32:P1=0:P2=P1:FOR B=1 TO 11
   :D=SCREEN+B*20:FOR C=D+1 TO D+18
IU 3045 D=PEEK(C):IF  NOT D THEN 3070
XZ 3050 IF D<64 THEN P1=P1+1
DS 3060 IF D>192 THEN P2=P2+1
NK 3070 NEXT C:A=P1:POSITION 6,0:GOSUB 32
   00:A=P2:POSITION 15,0:GOSUB 3200
GL 3080 PLOT 0,B:DRAWTO 19,B:FOR C=15 TO
   0 STEP -0.6:SOUND 0,50,2,C:NEXT C:NEXT
   B
QH 3120 IF P1=P2 THEN POSITION 3,5:? #6;"
   THE BATTLE HAS":POSITION 3,6:? #6;"END
   ED IN A tie":GOTO 3160
EY 3130 POSITION 6,4:IF P1>P2 THEN ? #6;"
   PLAYER 1":GOTO 3150
KG 3140 ? #6;"player ";CHR$(146)
YC 3150 POSITION 3,6:? #6;"REIGNS SUPREME
   "
KN 3160 FOR B=15 TO 0 STEP -1:FOR A=250 T
   O 10 STEP -20:SOUND 0,A,10,B:SOUND 0,A
   /2,10,B:NEXT A:NEXT B:GOTO 120
FM 3200 IF A<10 THEN ? #6;CHR$(176);
WK 3210 IF A<100 THEN ? #6;CHR$(176);
JB 3220 A$=STR$(A):FOR A=1 TO LEN(A$):? #
   6;CHR$(VAL(A$(A,A))+176);:NEXT A:RETUR
   N
ZM 7000 IF BRK THEN POKE 16,112:POKE 5377
   4,112:REM DEBUG
AI 7010 RETURN
EN 7049 REM TIME PRINTER
VY 7050 A=INT(TIME/60):? #6;CHR$(16+B);CH
   R$(16+A+B);CHR$(26);:IF A*60=TIME THEN
    ? #6;CHR$(16+B);CHR$(16+B):RETURN
YU 7060 A$=STR$(TIME-A*60):? #6;CHR$(VAL(
   A$(1,1))+16+B);CHR$(VAL(A$(2))+16+B):R
   ETURN
OC 7099 REM WAIT ROUTINE (A)
HD 7100 POKE 20,0
WH 7110 IF PEEK(20)<A THEN 7110
AN 7120 RETURN
QA 7999 REM TITLE SCREEN
EI 8000 POKE 559,0:POKE 560,TDLL:POKE 561
   ,TDLH:POKE 709,250:POKE 710,0:POKE 712
   ,0:POKE 88,0:POKE 89,TITLE/256
RC 8010 POSITION 10,3:B=0:GOSUB 7050:POKE
   559,34:POKE 77,0:POKE 756,224
KF 8020 IF PEEK(53279)=6 OR  NOT STRIG(0)
    OR  NOT STRIG(1) THEN RETURN
JU 8030 FOR A=1 TO 20:NEXT A
VB 8040 IF PEEK(53279)<>5 THEN 8010
DY 8050 TIME=TIME+15:IF TIME>120 THEN TIM
   E=15
TI 8060 POSITION 10,3:GOSUB 7050
HD 8070 IF PEEK(53279)=5 THEN 8070
RF 8080 GOTO 8010
XQ 8999 REM INITIALIZATION
KC 9000 GRAPHICS 18
ZO 9010 GOSUB 7000
IY 9020 DIM MEM$(3811),XPA(4),YPA(4),OPDI
   R(4),EVENT(4),JOY$(34),ADD(4),POS(1),X
   P(1),YP(1),DIR(1),A$(3)
HI 9025 DIM MOV$(46):MOV$="hh h h h h
   h  IPFTTP FUFPP Fn F0   ":MOV=
   ADR(MOV$)
ZG 9030 JOY$="hh h  x   L P J   L J   J
    J   ":JOY=ADR(JOY$)
AJ 9040 RESTORE 9500:FOR A=0 TO 4:READ B,
   C,D,E:ADD(A)=B:XPA(A)=C:YPA(A)=D:OPDIR
   (A)=E:NEXT A
JF 9050 MEM$=" ":MEM$(3811)=" ":MEM$(2)=M
   EM$:A=ADR(MEM$):CHSET=2048-(A-INT(A/20
   48)*2048)+A:PM=CHSET:TITLE=PM+1536
QE 9060 TDL=TITLE+200:TDLH=INT(TDL/256):T
   DLL=TDL-TDLH*256
MI 9070 POKE 203,C0:POKE 204,CHSET/256
DB 9080 A=USR(ADR("h   M    N  K P  L N
   N  P  "))
NB 9090 A=USR(MOV,ADR("<<<<<<<<
   ???<<    <<<<???   <<    <>????>"
   ),CHSET+48,55)
TU 9093 A=USR(MOV,ADR("<<      <       <<
         "),CHSET+102,25)
AA 9100 A=USR(MOV,ADR("<     <   ? ?
            "),CHSET+216,32)
CQ 9110 POKE 54279,PM/256:POKE 53256,0:PO
   KE 53257,0:POKE 623,1
OL 9120 A=USR(MOV,ADR("PPPPPPPG  P P PP P
     PP A"),TDL,25)
RO 9125 A=INT(TITLE/256):B=TITLE-A*256:PO
   KE TDL+8,B:POKE TDL+9,A
NY 9130 POKE TDL+25,TDLL:POKE TDL+26,TDLH
   :POKE 88,B:POKE 89,A:POKE 87,1
DH 9140 POSITION 4,0:? #6;"JAMES  hague"
FR 9150 POSITION 6,1:? #6;"presents"
TP 9160 POSITION 3,2:? #6;"CURRENT EVENTS
   ":POSITION 5,3:? #6;"time":TIME=30
TQ 9170 POSITION 8,4:? #6;"Press  START
    to begin":POSITION 5,6:? #6;"Press
    SELECT  to alter time"
ZI 9175 POSITION 4,8:? #6;"Copyright 1987
     Antic Publishing"
IO 9180 A=USR(MOV,ADR("h     L \  K0eFKP'
   "),1536,75)
BT 9182 A=USR(MOV,ADR("
   "),1611,75)
FR 9184 A=USR(MOV,ADR(" Lb HJJJ  XHh
    XH  hh h ?  hh h  i i  hh
   HJ h h           "),1686,75)
YT 9186 A=USR(MOV,ADR("
   <"),1761,19)
HF 9188 POKE 1728,PM/256:CHOP=1711:VMOVE=
   1721
PI 9190 POKE 203,255:POKE 208,128:POKE 20
   9,31:A=USR(1536):POKE 53761,0:POKE 537
   63,0:POKE 53765,0:RETURN
TJ 9499 REM DIRECTIONAL DATA
HR 9500 DATA 0,0,0,0
ZT 9510 DATA -20,0,-16,3
OY 9520 DATA 1,8,0,4
DV 9530 DATA 20,0,16,1
BI 9540 DATA -1,-8,0,2
```

## LISTING 2

```
OK 10 REM CURRENT EVENTS, LISTING TWO
WQ 20 REM BY JAMES HAGUE
FJ 30 REM (c) 1985,1987 ANTIC PUBLISHING
EV 35 REM (CREATES LINES 9025-9030, 9080-
   9100, 9120 & 9180-9186)
EV 40 REM (LINES 10-250 MAY BE USED WITH
   OTHER BASIC LOADERS IN THIS ISSUE.
IJ 50 REM CHANGE LINE 70 AS NECESSARY.)
PR 60 DIM FN$(20),TEMP$(20),AR$(93):DPL=P
```

```
   EEK(10592):POKE 10592,255
WO 70 FN$="D:LINES.LST":REM THIS IS THE N
   AME OF THE DISK FILE TO BE CREATED
RD 80 ? "Disk or Cassette?";:POKE 764,25
   5
PY 90 IF  NOT (PEEK(764)=18 OR PEEK(764)=
   58) THEN 90
TH 100 IF PEEK(764)=18 THEN FN$="C:"
VB 110 POKE 764,255:GRAPHICS 0:? "       AN
   TIC'S GENERIC BASIC LOADER"
MY 120 ? ,"BY CHARLES JACKSON"
KB 130 POKE 10592,DPL:TRAP 200
PU 140 ? :? :? "Creating ";FN$:? "...plea
   se stand by."
LW 150 RESTORE :READ LN:LM=LN:DIM A$(LN):
   C=1
BQ 160 AR$="":READ AR$
YC 170 FOR X=1 TO LEN(AR$) STEP 3:POKE 75
   2,255
DM 180 LM=LM-1:POSITION 10,10:? "(Countdo
   wn...T-";INT(LM/10);")      "
BK 190 A$(C,C)=CHR$(VAL(AR$(X,X+2))):C=C+
   1:NEXT X:GOTO 160
MM 200 IF PEEK(195)=5 THEN ? :? :? "TOO
   MANY DATA LINES!":? "CANNOT CREATE FIL
   E!":END
CM 210 IF C<LN+1 THEN ? :? "TOO FEW DATA
    LINES!":? "CANNOT CREATE FILE!":END
UQ 220 IF FN$="C:" THEN ? :? " Prepare ca
   ssette, press [RETURN]"
AR 230 OPEN #1,8,0,FN$
PV 240 POKE 766,1:? #1;A$;:POKE 766,0
AL 250 CLOSE #1:GRAPHICS 0:? " COMPLETED 
   "
KS 1000 DATA 845
SX 1010 DATA 057048050053032068073077032077
   0790860360400520540410580770790860360
   61034104104133241104133240
OC 1020 DATA 104133213104133212104133239104
   1332381600001772401452122302122080022
   30213230240208002230241198
SD 1030 DATA 238208234198239016230096034058
   0770790860610650680820400770790860360
   41155057048051048032074079
LP 1040 DATA 089036061034104104133213104170
   1891200021620042010112400162022010132
   40011202220100724000620220 1
LE 1050 DATA 014240001202134212096034058074
   0790890610650680820400740790890360411
   55057048056048032065061085
IV 1060 DATA 083082040065068082040034104169
   0001332051681692241332061772051452032
   00208249230204230206165206
EU 1070 DATA 201226208239096034041041155057
   0480570480320650610850830820400770790
   86044065068082040034060060
FR 1080 DATA 060060060060060060000000255255
   2552552550000000000000031063063063060
   060000000248252252252060060060
UI 1090 DATA 060063063063031000000006006025
   2252252248000000006006206306306306203
   4041044067072083069084043
EH 1100 DATA 052056044053053041155057048057
   0510320650610850830820400770790860440
   65068082040034060060124252
QY 1110 DATA 252252252124060000000002552552
   5525512606000601262552552552550000000
   34041044067072083069084043049
CL 1120 DATA 048050044050053041155057049048
   0480320650610850830820400770790860440
   65068082040034060126255255
OR 1130 DATA 255255126060000000301506325506
   3015003000192240252255252240192126195
   219243247255247126034041044
WH 1140 DATA 067072083069084043050049054044
   0510500411550570490500480320650610850
   83082040077079086044065068
ZW 1150 DATA 082040034112112112112112112112
   0710000000112006112007112112006112002
   000002112112002065034041044
XH 1160 DATA 084068076044050053041155057049
   0560480320650610850830820400770790860
   44065068082040034104160010
TP 1170 DATA 162006169007076092228165203048
   1011982032080391690601332032481652042

   40005056233001016011165205
MD 1180 DATA 240021056233001133205169089133
   2041600101652050321540061652040321540
   06216165206208007168169010
IQ 1190 DATA 166207240026165206056233001133
   0340410440490530510540440550530411550
   57049056050032065061085083
OH 1200 DATA 082040077079086044065068082040
   0034206165207233000133207162136160040
   173010210141196002141199002
WH 1210 DATA 141197002041015141004210141006
   2101420052101400072101382080362061740
   06208031169002141174006165
LK 1220 DATA 208141196002165209230208198209
   1411990022010162080081690311332091691
   28133034041044049054049049
UH 1230 DATA 044055053041155057049056052032
   0650610850830820400770790860440650680
   82040034208076098228072074
YJ 1240 DATA 074074074009144145088200104041
   0150091441450882002000960021041041332
   13104041063133212096104104
YI 1250 DATA 133212104024105000105004133213
   1041041681620151690001452122002020162
   50104170104240012168189228
IR 1260 DATA 006145212200232224016034041044
   0490540560540440550530411550570490560
   54032065061085083082040077
UU 1270 DATA 079086044065068082040034208245
   0960601262552311951952312552552311951
   95231255126060034041044049
RQ 1280 DATA 055054049044049057041155
```

40% faster basic for you   Article on page 35

# FAST-STACK AND FAST-JUMP

## LISTING 1

Don't type the TYPO II Codes!

```
KG 10 REM FASTPROG.BAS, LISTING 1
RI 20 REM BY BILL BODENSTEIN
PT 30 REM (c)1987, ANTIC PUBLISHING
EV 40 REM (LINES 10-250 MAY BE USED WITH
   OTHER BASIC LOADERS IN THIS ISSUE.
IJ 50 REM CHANGE LINE 70 AS NECESSARY.)
PR 60 DIM FN$(20),TEMP$(20),AR$(93):DPL=P
   EEK(10592):POKE 10592,255
GB 70 FN$="D:FASTPROG.LST":REM THIS IS TH
   E NAME OF THE DISK FILE TO BE CREATED
RD 80 ? "Disk or Cassette?";:POKE 764,25
   5
PY 90 IF  NOT (PEEK(764)=18 OR PEEK(764)=
   58) THEN 90
TH 100 IF PEEK(764)=18 THEN FN$="C:"
VB 110 POKE 764,255:GRAPHICS 0:? "       AN
   TIC'S GENERIC BASIC LOADER"
MY 120 ? ,"BY CHARLES JACKSON"
KB 130 POKE 10592,DPL:TRAP 200
PU 140 ? :? :? "Creating ";FN$:? "...plea
   se stand by."
LW 150 RESTORE :READ LN:LM=LN:DIM A$(LN):
   C=1
BQ 160 AR$="":READ AR$
YC 170 FOR X=1 TO LEN(AR$) STEP 3:POKE 75
   2,255
DM 180 LM=LM-1:POSITION 10,10:? "(Countdo
   wn...T-";INT(LM/10);")      "
BK 190 A$(C,C)=CHR$(VAL(AR$(X,X+2))):C=C+
   1:NEXT X:GOTO 160
MM 200 IF PEEK(195)=5 THEN ? :? :? "TOO
   MANY DATA LINES!":? "CANNOT CREATE FIL
   E!":END
```

continued on next page

```
CM 210 IF C<LN+1 THEN ? :? "▣TOO FEW DATA
   LINES!":? "CANNOT CREATE FILE!":END
UQ 220 IF FN$="C:" THEN ? :? " Prepare ca
   ssette, press [RETURN]"
AR 230 OPEN #1,8,0,FN$
PV 240 POKE 766,1:? #1;A$;:POKE 766,0
AL 250 CLOSE #1:GRAPHICS 0:? "COMPLETED
   "
DV 1000 DATA 200
PG 1010 DATA 048032088061085083082040065068082040034104169160133225169000133224
   168162253142001211177224162
HD 1020 DATA 255142001211145224200208239230225165225201192208231169139141198182
   169165141192182141197182169
DT 1030 DATA 118141204189169160141205189162020160092177212157113160136202016247
   096162253142001211165160133
SZ 1040 DATA 138165161133139160002177138133159024096034041041058067076082032155
   049032088061085083082040065
VG 1050 DATA 068082040034104169032141170169169006141171169169160141172169169234
   141173169162032160067177212
II 1060 DATA 157000160136202016247096234162253142001211160001165161209138144014
   208007136165160209138144005
EP 1070 DATA 165139164138096165137164136096034041041155
```

# LISTING 2

```
0100 ; FAST STACK
0110 ; BY BILL BODENSTEIN
0120 ; (c)1987, ANTIC PUBLISHING
0130 ;
0140 ;EQUATES
0150 ;
0160 PORTB = $D301     ;Toggle ROM
0170 BASIC.ON = 253
0180 BASIC.OFF = 255
0190 ;
0200 LDA =     165     ;Decimal opcode
0210 STMCUR = $8A      ;BASIC line ptr
0220 FORLN = $A0       ;Line # put here
0230 ;
0240 PUT.PATCH1 = $A071 ;Patch after
0250 ;                   STOP/END
0260 PUT.PATCH2 = PUT.PATCH1+5
0270 ;
0280 ;                 Relocatable, but
0290      *=  $0600    ;could be called
0300 ;                  via USR(1536)
0310 STARTCODE
0320      PLA          ;Remove # args
0330 COPY.BASIC
0340      LDA #$A0     ;Start of BASIC
0350      STA $E1
0360      LDA #$00
0370      STA $E0
0380      TAY
0390 LOOP1
0400      LDX #BASIC.ON
0410      STX PORTB    ;BASIC ROM on
0420      LDA ($E0),Y ;Get a byte
0430      LDX #BASIC.OFF
0440      STX PORTB    ;BASIC RAM on
0450      STA ($E0),Y ;Copy byte
0460      INY
0470      BNE LOOP1    ;And loop
0480 ;
0490      INC $E1
0500      LDA $E1
0510      CMP #192     ;Until all moved
0520      BNE LOOP1
0530 ;
0540 MODIFY.BASIC
0550      LDA #STMCUR+1 ;LDA ($8A),Y=>
0560      STA $B6C6    ;  LDA  $8B
0570      LDA #LDA     ;  and LDA $8A
0580      STA $B6C0
0590      STA $B6C5
0600 ;
0610      LDA # <PUT.PATCH2
0620      STA $BDCC    ;Change JSR from
0630      LDA # >PUT.PATCH2
0640      STA $BDCD    ;$B816 to patch2
0650 ;
0660 ;Install patch to re-enable ROM
0670 ;at STOP or END, and patch to
0680 ;change line pointer.
0690      LDX #ENDCODE-PATCH1-1
0700      LDY #ENDCODE-STARTCODE-1
0710 LOOP2
0720      LDA ($D4),Y ;Move bytes from
0730      STA PUT.PATCH1,X ;USR code
0740      DEY
0750      DEX
0760      BPL LOOP2    ;Done when patch
0770 ;
0780      RTS          ;installed
0790 ;
0800 ;Patches to be placed in code
0810 ;after STOP/END. Note: once
0820 ;BASIC ROM is enabled by patch1,
0830 ;patch2 won't be executed.
0840 PATCH1
0850      LDX #BASIC.ON
0860      STX PORTB
0870 ;
0880 PATCH2
0890      LDA FORLN    ;Ln addr is here
0900      STA STMCUR   ;Point to it
0910      LDA FORLN+1
0920      STA STMCUR+1
0930      LDY #2       ;(Rest is the
0940      LDA (STMCUR),Y ; same)
0950      STA $9F
0960      CLC
0970      RTS
0980 ENDCODE
```

# LISTING 3

```
0100 ; FAST JUMP
0110 ; BY BILL BODENSTEIN
0120 ; (c)1987, ANTIC PUBLISHING
0130 ;
0140 ; EQUATES
0150 ;
0160 PORTB = $D301     ;Toggle ROM here
0170 BASIC.ON = 253
0180 ;
0190 JSR =    32       ;Decimal opcodes
0200 NOP =    234
0210 STMTAB = $88      ;Start of prog
0220 STMCUR = $8A      ;Current line
0230 FORLN = $A0       ;Lnno saved here
0240 ;
0250 PUT.PATCH = $A000 ;Mem for patch
0260 JSR.HERE = PUT.PATCH+6 ;Actual
0270 ;                       code
0280 ;
0290      *=  $0600    ;Relocatable but
0300 ;                  could be called
0310 ;                  via USR(1536)
0320 STARTCODE
0330      PLA          ;Remove # args
0340 ;
0350 ;Before searching for line,
0360 ;jump to patch.
0370 MODIFY.BASIC
0380      LDA #JSR     ;JSR PATCH
0390      STA $A9AA
0400      LDA # <JSR.HERE
0410      STA $A9AB
0420      LDA # >JSR.HERE
0430      STA $A9AC
0440      LDA #NOP     ;NOP
0450      STA $A9AD
0460 ;
0470 ;Install patch in unused (except
0480 ;with NEW) BASIC RAM.
0490      LDX #ENDCODE-PATCH-1
0500      LDY #ENDCODE-STARTCODE-1
0510 LOOP
0520      LDA ($D4),Y ;Move bytes from
0530      STA PUT.PATCH,X ;USR code
0540      DEY
0550      DEX
0560      BPL LOOP     ;Done when patch
0570      RTS          ;installed
0580 ;
0590 ;Patch to be installed in BASIC
0600 ;RAM. If NEW occurs, BASIC ROM
0610 ;is enabled so that patch isn't
0620 ;accidently executed.
0630 ;(Remember: With FAST-STACK, ROM
0640 ;is always enabled in direct
0650 ;mode.)
0660 PATCH
0670      NOP
0680      LDX #BASIC.ON
0690      STX PORTB
0700 ;
```

```
0710      LDY #1          ;Is lnno >= curr
0720      LDA FORLN+1 ; lnno???
0730      CMP (STMCUR),Y
0740      BCC NORMAL
0750      BNE FAST
0760 ;
0770      DEY
0780      LDA FORLN
0790      CMP (STMCUR),Y
0800      BCC NORMAL
0810 ;
0820 FAST
0830      LDA STMCUR+1 ;Yes,start from
0840      LDY STMCUR  ; current line
0850      RTS
0860 NORMAL
0870      LDA STMTAB+1 ;No,start from
0880      LDY STMTAB  ; first line
0890      RTS
0900 ENDCODE
```

---

**two-player ACTION! shootout**

# KILLER CHESS

Article on page 9

## LISTING 1

Don't type the TYPO II Codes!

```
; KILLER CHESS
; BY GREG KNAUSS
; (c)1987, ANTIC PUBLISHING

CARD PM,CH
BYTE I,J,K,STK,PLR,LOC,CAP,OK
BYTE ARRAY X(2),Y(2),DX(2),DY(2),
     HOLD(2),PAU(2),SND(2),DIS(2)
INT  X1,Y1,DX,DY,DUM1,DUM2

PROC CURSOR()

; SHAPE FOR CURSORS
[255 129 129 129 129 129 129 255]

PROC CHRS()

; BOARD EDGE
[  0   0   0   0   0   0   0   0
   0   0   0   0  15  15  15  15
   0   0   0   0   0   0   0   0
   0   0   0   0 255 255 255 255
   0   0   0   0 240 240 240 240
  15  15  15  15  15  15  15  15
 240 240 240 240 240 240 240 240
  15  15  15  15   0   0   0   0
 255 255 255 255   0   0   0   0
 240 240 240 240   0   0   0   0

; PIECES
   0   0   0  56  56  16 124   0
   0  84 124  56  56  56 124   0
   0   6  60 124  28  28  60 126
   0  16  24 108 124  56  16 124
   0 214 254 124  56  56 124 254
   0  16  56 146 254 124  56 124

; TITLE
   0 247 108 112 112 108 246   3
   0  62 102  96  96 102  60   0
  24   0  56  24  24  24  60   0
 224  96 124 102 102 102 247   0
  56  24  24  24  24  24  60   0
   0   0  60 102 126  96  62   0
   0   0 220 102  96  96 240   0
   0   0  62  96  60   6 124   0

; "PRESS START"
   0 238 170 238 140 138   0   0
   0 238 136 206 130 238   0   0
   1 225 129 225  33 225   1   0
 255  17 123  27 219  27 255   0
 255  17  85  17  83  85 255   0
 240  16 176 176 176 180 240   0]

PROC SETUP()
GRAPHICS(18) POKE(559,0)
POKE (559,46)

; COLORS
SETBLOCK(706,2,66)
POKE(704,14) POKE(705,8)
POKE(708,10) POKE(710,4)
POKE(709,142) POKE(711,15) ;DO 711

; P/M GRAPHICS
PM=(PEEK(106)-8)*256
POKE(54279,PM/256) POKE(53277,3)
SETBLOCK(53258,2,3) ZERO(PM,1024)
POKE(623,2) PM==+512 K=51
FOR I=32 TO 95 STEP 8 DO
 FOR J=0 TO 7 DO POKE(PM+I+J+256,K)
  POKE(PM+I+J+384,K) OD K=255-K OD

; REDEFINED CHARACTERS
CH=(PEEK(106)-16)*256
MOVEBLOCK(CH,CHRS,512)
POKE(756,CH/256)

; DRAW BOARD
POSITION(5,1) PRINTD(6,"▛▀▀▀▀▀▀▀▀▀▀▜")
  FOR I=2 TO 9 DO POSITION(5,I)
  PRINTD(6,"▌          ▐") OD
POSITION(5,10) PRINTD(6,"▙▄▄▄▄▄▄▄▄▄▄▟")
POSITION(6,2) PRINTD(6,"+,-./-,+")
POSITION(6,3) PRINTD(6,"**********")
POSITION(7,5) PRINTD(6,"■■■■■■")
POSITION(7,6) PRINTD(6,"■■■■■")
POSITION(6,8) PRINTD(6,"■■■■■■■■■■")
POSITION(6,9) PRINTD(6,"■■■■■■■■■■")
POSITION(7,11) PRINTD(6,"■■■■■■")
POKE(53250,96) POKE(53251,128)
POKE(559,46)

; WAIT FOR [START]
I=0 DO POKE(54282,0) POKE(53273,I)
 I==+3 UNTIL PEEK(53279)=6 OD

; DRAW PIECES
POSITION(6,2) PRINTD(6,"+*      ■■")
POSITION(6,3) PRINTD(6,",*      ■■")
POSITION(6,4) PRINTD(6,"-*      ■■")
POSITION(6,5) PRINTD(6,".*      ■■")
POSITION(6,6) PRINTD(6,"/*      ■■")
POSITION(6,7) PRINTD(6,"-*      ■■")
POSITION(6,8) PRINTD(6,",*      ■■")
POSITION(6,9) PRINTD(6,"+*      ■■")
POSITION(7,11) PRINTD(6,"        ")
RETURN

PROC MAIN()

; GAME LOOP
DO

SETUP()

X(0)=6 Y(0)=5 X(1)=13 Y(1)=6
HOLD(0)=0 HOLD(1)=0 PAU(0)=0 PAU(1)=0
PLR=1

; PLAYER TURN LOOP
DO

; ALTERNATE PLAYERS
PLR=1-PLR
```

continued on next page

```
; RESET THESE FOR EACH TURN
X1=0 Y1=0 POKE(77,0)
IF PAU(PLR)=0 THEN SOUND(PLR,0,0,0)
 FI

; MOVE WHICH WAY???
STK=STICK(PLR)
IF STK=14 OR STK=10 OR STK=6 THEN
 Y1=-1 FI
IF STK=13 OR STK=9 OR STK=5 THEN Y1=1
 FI
IF STK=11 OR STK=10 OR STK=9 THEN
 X1=-1 FI
IF STK=7 OR STK=6 OR STK=5 THEN X1=1
 FI

; KEEP PLAYER ON BOARD
LOC=LOCATE(X(PLR)+X1,Y(PLR)+Y1)
IF LOC<10 THEN X1=0 Y1=0 FI

; MOVE CURSOR
IF Y1<>0 THEN
 ZERO(PM+128*PLR+16+8*Y(PLR),8) FI
X(PLR)==+X1 Y(PLR)==+Y1
POKE(53248+PLR,8*X(PLR)+48)
MOVEBLOCK(PM+128*PLR+16+8*Y(PLR),
 CURSOR,8)

; WAIT! HE'S PLACING A PIECE!
IF HOLD(PLR)>0 AND STRIG(PLR)=0 AND
 PAU(PLR)=0 THEN CAP=0 OK=0 DX=0 DY=0

; SOMETHING TO CAPTURE!
 IF LOC<>32 THEN CAP=1 FI

; FIND DELTA VALUES
 DUM1=X(PLR)
 DUM2=OX(PLR)
 DX=DUM1-DUM2

 DUM1=Y(PLR)
 DUM2=OY(PLR)
 DY=DUM1-DUM2

; FLIP FOR PLAYER 2
 IF PLR=1 THEN DX=-DX DY=-DY FI

; IS IT LEGAL???

; PAWN
 IF HOLD(PLR)=1 THEN
  IF DX=1 AND DY=0 AND CAP=0 THEN
   OK=1 FI
  IF DX=2 AND DY=0 AND CAP=0 AND
   OX(PLR)=7+PLR*5 THEN OK=1 FI
  IF DX=1 AND (DY=1 OR DY=-1) AND
   CAP=1 THEN OK=1 FI FI

; ROOK
 IF HOLD(PLR)=2 THEN
  IF (DX<>0 AND DY=0) OR (DX=0 AND
   DY<>0) THEN OK=1 FI FI

; KNIGHT
 IF HOLD(PLR)=3 THEN
  IF (DX=2 AND DY=1) OR (DX=-2 AND
   DY=1) THEN OK=1 FI

  IF (DX=2 AND DY=-1) OR
   (DX=-2 AND DY=-1) THEN OK=1 FI
  IF (DX=1 AND DY=2) OR (DX=-1 AND
   DY=2) THEN OK=1 FI
  IF (DX=1 AND DY=-2) OR
   (DX=-1 OR DY=-2) THEN OK=1 FI FI

; BISHOP
 IF HOLD(PLR)=4 AND (DX=DY OR DX=-DY)
  THEN OK=1 FI

; QUEEN
 IF HOLD(PLR)=5 THEN
  IF DX=DY OR DX=-DY THEN OK=1 FI
  IF (DX<>0 AND DY=0) OR (DX=0 AND
   DY<>0) THEN OK=1 FI FI

; KING
 IF HOLD(PLR)=6 THEN
  IF (DX=1 AND DY=1) OR (DX=0 AND
   DY=1) OR (DX=-1 AND DY=1) THEN
   OK=1 FI
  IF (DX=1 AND DY=0) OR (DX=-1 AND
   DY=0) THEN OK=1 FI
  IF (DX=1 AND DY=-1) OR (DX=0 AND
   DY=-1) OR (DX=-1 AND DY=-1) THEN
   OK=1 FI FI

; CAN'T CAPTURE OWN PIECES OR
; BORDER
 IF LOC>128*PLR+41 AND
  LOC<128*PLR+127 OR LOC<10 THEN OK=0
  FI

; DIDN'T MOVE
 IF DX=0 AND DY=0 THEN OK=1 FI

; MAKE SURE JUMPS WEREN'T MADE,
; EXCEPT BY KNIGHT
 IF HOLD(PLR)<>3 THEN
  I=OX(PLR) J=OY(PLR)
  X1=0 Y1=0
  IF DX<0 THEN X1=-1 FI
  IF DX>0 THEN X1=1 FI
  IF DY<0 THEN Y1=-1 FI
  IF DY>0 THEN Y1=1 FI
  IF PLR=1 THEN X1=-X1 Y1=-Y1 FI
  IF (DX<-1 OR DX>1) OR (DY<-1 OR
   DY>1) THEN
    DO
     I==+X1 J==+Y1
     K=LOCATE(I,J)

     IF K<>32 THEN OK=0 FI
     UNTIL (I=X(PLR)-X1 AND
      J=Y(PLR)-Y1) OR K<10 OD FI FI
; LEGAL MOVE!
 IF OK=1 THEN
  COLOR=32 PLOT(OX(PLR),OY(PLR))
  COLOR=HOLD(PLR)+128*PLR+41

;  QUEEN ME!
  IF HOLD(PLR)=1 AND
   X(PLR)=7*(1-PLR)+6 THEN
   COLOR=128*PLR+46 FI

;  KILL OTHER PLAYERS HOLD IF THAT'S
;  WHAT WAS CAPTURED
  IF X(PLR)=OX(1-PLR) AND
   Y(PLR)=OY(1-PLR) THEN
   HOLD(1-PLR)=0
   POSITION(11*(1-PLR)+4,2)
   PRINTD(6," ") FI

;  WHO'D HE LAND ON??
  K=LOCATE(X(PLR),Y(PLR))

;  WHOEVER IT WAS, KILL HIM
  PLOT(X(PLR),Y(PLR))
  COLOR=32 PLOT(11*PLR+4,2)

;  A KING DIED!
  IF K-128*(1-PLR)-41=6 THEN EXIT FI
  HOLD(PLR)=0
  SND(PLR)=100*PLR+100 DIS(PLR)=14 FI

;  ILLEGAL MOVE...
  IF OK=0 THEN SND(PLR)=255
   DIS(PLR)=2 FI
PAU(PLR)=5 FI

; PICK UP PIECE
IF HOLD(PLR)=0 AND STRIG(PLR)=0 AND
 PAU(PLR)=0 AND LOC<>32 AND
 LOC>128*PLR+41 AND LOC<128*PLR+127
 THEN

; Grab HOLD
 HOLD(PLR)=LOC-128*PLR-41
 OX(PLR)=X(PLR) OY(PLR)=Y(PLR)
 COLOR=LOC PLOT(11*PLR+4,2)
 SND(PLR)=100*PLR+100 DIS(PLR)=10
 PAU(PLR)=5 FI
; DELAY
FOR CH=1 TO 2000 DO OD

; PAUSE FOR HUMANS
IF PAU(PLR)>0 THEN PAU(PLR)==-1
 SOUND(PLR,SND(PLR),DIS(PLR),
 PAU(PLR)*2) FI

; NEXT PLAYER
OD

; VICTORY ROUTINE
SNDRST() ZERO(PM,256) COLOR=32
FOR I=2 TO 9 DO FOR J=6 TO 13 DO
 LOC=LOCATE(J,I) IF LOC>128*(1-PLR)
 AND LOC<128*(1-PLR)+127 THEN
 PLOT(J,I) FI OD OD PLOT(4,2)
 PLOT(15,2)
; PAUSE
CH=0 DO CH==+1 FOR I=1 TO 100 DO OD
 UNTIL CH=7500 OR PEEK(53279)=6 OD

; START NEW GAME
OD
```

# Got-A-Minute Graphics

Article on page 45

## LISTING 1

```
Rem FIREWORKS
Rem BY M. Lorenz/A. Moose
Rem (c)1987, ANTIC PUBLISHING
Setcolor 0,0,0,0
C=1
Xcent=160
Ycent=100
Plot Xcent,Ycent
For Point=1 To 2000
  Inc C
  If C=16 Then
    C=1
  Endif
  Color C
  R=Point/10
  T=Point
  X=R*Cos(T)
  Y=R*Sin(T)
  Plot X+Xcent,Y+Ycent
  X=(Point+C)/16*Cos(Point+C+60)
  Y=(Point+C)/16*Sin(Point+C+60)
  Plot X+Xcent,Y+Ycent
Next Point
Pause 200
Setcolor 0,7,7,7
```

## LISTING 2

```
Rem DIAMOND
Rem BY MOOSE/LORENZ
Rem (c)1987, ANTIC PUBLISHING
Deffill 1
Color 1
Fill 0,0
For Row=10 To 160 Step 2
  C=Row/10
  Color C
  Draw 0,80 To 160,Row
  Draw 300,80 To 160,Row
Next Row
Pause 200
```

## LISTING 3

```
Rem MOIRE
Rem BY M. LORENZ/A. MOOSE
Rem (c)1987, ANTIC PUBLISHING
Style=0.6
For Vert=-200 To -0
  For Horz=-320 To -0
    C=(190-Int((Vert*Vert+Horz*Horz)^Style))/3
    C=3*(C<>Int(C))+3
    Color C
    Horz1=Horz+300
    Vert1=Vert+200
    Plot Horz1,Vert1
    Plot 320-Horz1,Vert1
  Next Horz
Next Vert
```

## LISTING 4

```
Rem STARS
Rem BY M. LORENZ/A. MOOSE
Rem (c)1987, ANTIC PUBLISHING
Setcolor 0,0,0,0
L=80
C=1
For J=80 To 160 Step 5
  Color C
  L=L-(Rnd(1))*(L-(Rnd(1)*160))
  K=160-L
  Draw 60+J,80 To 60+K,K
  Draw 69+K,K To 140,J
  Draw 140,J To 60+L,K
  Draw 60+L,K To 220-J,80
  Draw 220-J,80 To 60+L,L
  Draw 60+L,L To 140,160-J
  Draw 140,160-J To 60+K,L
  Draw 60+K,L To 60+J,80
  Inc C
  If C=16 Then
    C=1
  Endif
Next J
Pause 200
Setcolor 0,7,7,7
```

## LISTING 5

```
Rem SINESCAPES
Rem BY M. LORENZ/A. MOOSE
Rem (c)1987, ANTIC PUBLISHING
Setcolor 0,0,0,0
C=1
For Sine=1 To 10
  Axis=Int(192*Rnd(1))
  Map1=192-Axis
  If Axis<Map1 Then
    Map2=Axis
    If Map1<Axis Then
      Map2=Map1
    Endif
  Endif
  Amp=Int(Map2*Rnd(1))
  Per=Int(100*Rnd(1)+1)
  Phi=6.28*Rnd(1)
```

continued on next page

```
  Shift=Int(3*Rnd(1))+1
  For X=0 To 300 Step Shift
    Color C
    Y=Amp*(Sin(X/Per-Phi))+Axis
    Plot X,Y
    Draw X,Y To X,Axis
  Next X
  Inc C
  If C=16 Then
    C=1
  Endif
Next Sine
Pause 200
Setcolor 0,7,7,7
```

## LISTING 6

```
Rem TRIANGLES
Rem BY M. LORENZ/A. MOOSE
Rem (c)1987, ANTIC PUBLISHING
Dim T(220)
R=1
C=1
For I=0 To 127
  For A=1 To I+1
    Color C
    N=T(A)
    T(A)=Abs(R-T(A))
    C=1*(Not (T(A)))+1
    Plot 2*A-I+150,I+20
    R=N
  Next A
Next I
Pause 200
Setcolor 0,7,7,7
```

# New Products

continued from page 16

### BALLISTICS

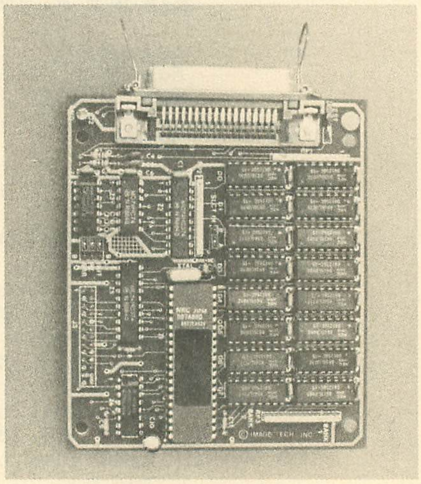
(application software)
Joseph Attanasio
1769 Silver Creek Circle
Stockton, CA 95207
(209) 478-3092
$10, 48K disk
CIRCLE **201** ON READER SERVICE CARD

The **Ballistics** program allows comparison of most commercial bullets for rifles and pistols, with 19 pistol calibers and 33 rifle calibers to choose from. The data can be printed, and it includes case capacity, velocity, energy, drop, ballistics co-efficients and sectional density. Utilities include calculation of velocity or drop of a bullet at any range, time of flight, wind deflection for crosswinds, bullet path vs. sight path, and target movement during shot.

### IMAGE BUFFER

(printer buffer)
Image Technology, Inc.
8150 S. Akron Street, Suite 405
Englewood, CO 80112
(303) 799-6433
CIRCLE **202** ON READER SERVICE CARD

This large-capacity buffer mounts *inside* most Epson printers and lets you transfer data to the printer at computer speed—then continue working while the printer operates at its own pace. Expandable to 512K, this buffer works



just like Epson's optional buffer and fits most Epson dot-matrix parallel printers. If you furnish the DRAM chips, the buffer costs $109. Otherwise, $133 includes eight 256K RAM chips, and $157 includes 16 of the chips.

### LOTTO PROGRAM

(entertainment software)
Soft-Byte
P.O. Box 556, Forest Park
Dayton, OH 45405
(513) 278-8044
$24.95, 48K disk

**The Lotto Program** performs an analysis of the past winning lotto numbers, attempting to show the probability of which numbers are likely to surface in the next few drawings. This menu-driven program produces easy-to-read charts from which you can try to pick hot and cold numbers, frequency, patterns, sums of digits, odd/even numbers, digit groups and more.

### PRO FOOTBALL HANDICAPPER

(software)
SoftTech Group Inc.
P.O. Box 5394
Orchard Lake, MI 48033
(313) 851-4925
$39.95, 16K disk or cassette
CIRCLE **157** ON READER SERVICE CARD

The **Pro Football Handicapping System** lets you handicap all National Football League games using past statistical information from the daily sports section in most newspapers, and you can use this program beginning at any point in the season. You'll need to spend only about five minutes entering the data necessary to perform the statistical analysis to predict the winner, the point spread and total points in the game. ■

*Return the favor. When you call a manufacturer or supplier about a product you've seen advertised or otherwise mentioned in ANTIC, please tell them so. This will help us to continue to bring you the latest information about products that will make your Atari computer an even more valuable investment in the future.*
—ANTIC ED

# ATTENTION RETAILERS!

Starting with our March 1988 issue, **Antic—The Antic Resource** introduces

## The Retail Directory

We can now deliver to *you*, our valued retailer, the over 100,000 Atari enthusiasts who read **Antic** every month.

**Where:** In every issue of **Antic**.

**How:** Send us the name of your store, address, city, state, zip code, and telephone number. Your listing will appear under your state in our Retail Directory pages.

**Cost:** $30.00 per issue (three issue minimum order—$90.00) or $300.00 per year (a savings of 20%, or $60.00 per year).

Listing Deadline for March 1988 Issue:
**December 1, 1987**

Send To: **Retail Listings**
**Antic Publishing, Inc.**
**544 Second Street**
**San Francisco, CA 94107**
**(415) 957-0886**

Please Note:
- Listings can include name of store, address and telephone number *only*. All other copy will be deleted for publication.
- All listing copy *must* be typewritten.
- If you already have terms with our retail department and sign up for listing in twelve issues, we will extend credit. Terms are as follow:
- Upon our receipt of your listing, you will be billed for $300.00. You may pay this total at once, or pay $100.00 every 30 days until the $300.00 is paid in full.
- Month-to-month listings must be prepaid by the listing deadline date for each issue (3 months prior to cover date, e.g., April 1988 issue deadline is January 1, 1988). Just mail in your payment, and if the listing is the same as a previous issue, include a note saying "repeat listing from (issue date)."
- If you need to correct or change your listing for any reason, please allow three months from the date you submit your change for the change to appear in the magazine.

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**AMAZING ATARI 8-BIT SOFTWARE!!!** Choose from over 200 Public Domain Theme Disks or pick individual programs. Large Catalog free! Write BELLCOM, Box 1043-A, Peterborough, Ontario, Canada K9J 7A5 (3/88)

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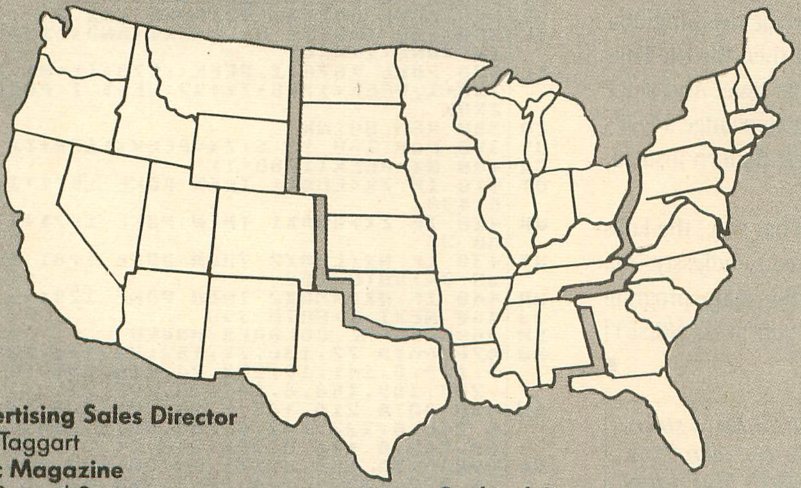
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By LARRY NOCELLA

# BASIC Boink

***BASIC Boink is a colorful new slant on the popular Boink graphics demo programs. Previous Tech Tips from stalwart JACS (Jersey Atari Computer Society) programmer Larry Nocella have appeared in the January, 1987 and April, 1987 issues of* Antic. *BASIC Boink works on any Atari 8-bit computer with 16K, disk or cassette.***

You've seen those Boink programs—bouncing balls, or Atari symbols (Fujis), etc. Like many other Atari programmers, I enjoy these flashy demonstrations of graphics power. So I decided to throw in my own two cents worth—a Boink variation in Atari BASIC that looks good despite the comparative slowness of the language.

Type in BOINK.BAS, check it with TYPO II and SAVE a copy before you RUN it. The program is written in BASIC, but the main work is done by a machine language routine. A DLI (Display List Interrupt) between the six Fujis changes their directions, colors and X-coordinates. This gives the effect of several individual objects.

## ABOUT THE PROGRAM

The DLI routine occupies the first half of Page 6 (memory locations 1536-1663) and the rest of Page 6 tracks individual Fuji status.

When you look closely at the display, you'll notice that six Fujis stay on the right side of the screen and six stay on the left. They are kept there by the BASIC part of the program. I could've checked the limits in the DLI, but then the the Fujis would remain in the same pattern the whole time. And since BASIC is slower to the punch, it takes longer to change a Fuji's direction. So the bouncing Fujis change their pattern instead, making the demo more interesting.

Try pressing [BREAK] to end the demo. That way, the Fujis aren't restrained and will go across the screen endlessly. You can type and list the program, but since the main program is in a DLI, the Fujis will keep going until you press [RESET] to return things to normal. ■

> *If you have a Tech Tip that you would like to share with other readers, send it along to Antic Tech Tips, 544 Second Street, San Francisco, CA 94107. You might get your name in print. We always welcome very short programs that demonstrate the Atari's powers, simple hardware modifications, or useful macros for popular software.*

Don't type the TYPO II Codes!

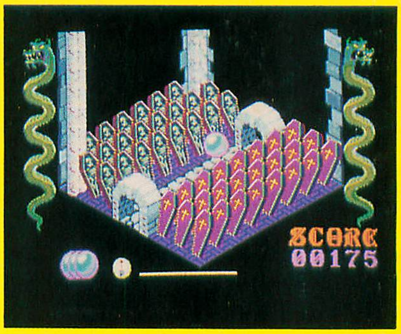
```
BB 10 REM BASIC BOINK
GH 20 REM BY LARRY NOCELLA
PT 30 REM (c)1987, ANTIC PUBLISHING
SP 32 GOTO 40
FS 34 FOR S=80 TO 0 STEP -10:SOUND 0,S,10
   ,10:NEXT S:RETURN
SF 36 FOR S=45 TO 0 STEP -5:SOUND 0,S,10,
   10:NEXT S:RETURN
NK 40 KEEP=PEEK(106)-16:POKE 54279,KEEP:G
   RAPHICS 0:POKE 752,1
LQ 50 POKE 710,0:POKE 559,46:POKE 53277,3
   :ST=24:EN=109:IC=15:ZXOK=PEEK(559)
VH 60 POKE 559,0:POKE 623,1
SF 70 LMAX1=120:RMAX1=180
YY 80 LMAX2=54:RMAX2=114
DZ 90 POSITION 0,1:? "BASIC BOINK
        BY LARRY NOCELLA"
TB 100 REM CLEAR P/M AREA
RT 110 PMB=KEEP*256:POKE 712,6
PT 120 FOR LOOP=PMB+512 TO PMB+1024:POKE
   LOOP,0:NEXT LOOP
SP 130 REM PLAYERS
SK 140 FOR LOOP=ST TO EN STEP IC
JE 150 RESTORE 520:FOR ZX=1 TO 8:READ A
PX 160 POKE PMB+512+LOOP+ZX,A
NF 170 POKE PMB+768+LOOP+ZX,A:NEXT ZX
JY 180 RESTORE 530:FOR ZX=1 TO 8:READ A
RE 190 POKE PMB+640+LOOP+ZX,A
NT 200 POKE PMB+896+LOOP+ZX,A:NEXT ZX
CD 210 NEXT LOOP:POKE 712,4
GE 220 REM DLI
KO 230 RESTORE 470:FOR I=1 TO 104:READ Z:
   POKE 1535+I,Z:NEXT I
UA 240 START=PEEK(560)+PEEK(561)*256
WA 250 POKE START+6,130:POKE START+9,130:
   POKE START+12,130:POKE START+16,130:PO
   KE START+20,130
RS 260 POKE START+24,130:POKE 1664,0
AU 270 REM COLORS
ZS 280 RESTORE 290:FOR I=0 TO 5:READ Q,Z:
   POKE 1665+I,Q:POKE 1694+I,Z:NEXT I
TR 290 DATA 8,100,68,214,54,114,166,24,88
   ,194,228,146
XG 300 REM X-COORDINATE
XT 310 FOR I=0 TO 5:POKE 1678+I,160:POKE
   1708+I,80:NEXT I
VP 320 REM DIRECTION  (1=L  0=R)
CL 330 FOR I=0 TO 5:POKE 1671+I,0:POKE 17
   01+I,1:NEXT I
VV 340 POKE 512,0:POKE 513,6
VI 350 POKE 54286,192:POKE 712,2
YL 360 FOR I=0 TO 5:Q1=INT(RND(1)*40):Q2=
   INT(RND(1)*40)
EL 370 POKE 1678+I,PEEK(1678+I)+Q1:POKE 1
   708+I,PEEK(1708+I)+Q2:NEXT I:POKE 559,
   ZXOK
CQ 380 REM BOINK
UY 390 FOR I=0 TO 5:ZX=PEEK(1678+I)
CA 400 NX=PEEK(1708+I)
DT 410 IF ZX<LMAX1 THEN POKE 1671+I,0:GOT
   O 430
UR 420 IF ZX>RMAX1 THEN POKE 1671+I,1:GOS
   UB 36
HT 430 IF NX<LMAX2 THEN POKE 1701+I,0:GOS
   UB 34:GOTO 450
HR 440 IF NX>RMAX2 THEN POKE 1701+I,1
JJ 450 NEXT I:GOTO 390
SM 460 REM ML COLORER/MOVER
RQ 470 DATA 72,138,72,152,72,174,128,6,18
   9,129,6,141,18,208,24,216,105,6,141,19
   ,208,189,158,6,141,20,208,24
BW 480 DATA 216,105,6,141,21,208,189,135,
   6,240,6,222,142,6,184,80,3,254,142,6,1
   89,142,6,141,0,208,216,24
QF 490 DATA 105,8,141,1,208,189,165,6,240
   ,6,222,172,6,184,80,3,254,172,6,189,17
   2,6,141,2,208,24,216,105
FV 500 DATA 8,141,3,208,232,224,6,208,2,1
   62,0,142,128,6,104,168,104,170,104,64
PC 510 REM PLAYER DATA (L/R)
FJ 520 DATA 13,13,13,13,13,29,57,113
KR 530 DATA 176,176,176,176,176,184,156,1
   42
```



ATARI SC1224
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# Airball




An exciting new game for your Atari ST with *outstanding* graphics!

"Now you're really in trouble," said the Evil Wizard, "I'm turning you into a ball of air and sending you into a mansion with over 250 rooms! If that sounds easy, I'm telling you it's not. Your ball has a slow leak and you'll need to jump on a pump and pump yourself up, but the pumps are hidden in only a few rooms.

Once in the rooms you'll have to pick up objects that have been left behind, such as crosses, tins of beans, a Buddha, and a dragon statue. At the end of the maze is a spell book that will turn you back into a human again. "Sounds easy," you say to the wizard, as he laughs and says, "there is much more in store for you than you realize!"

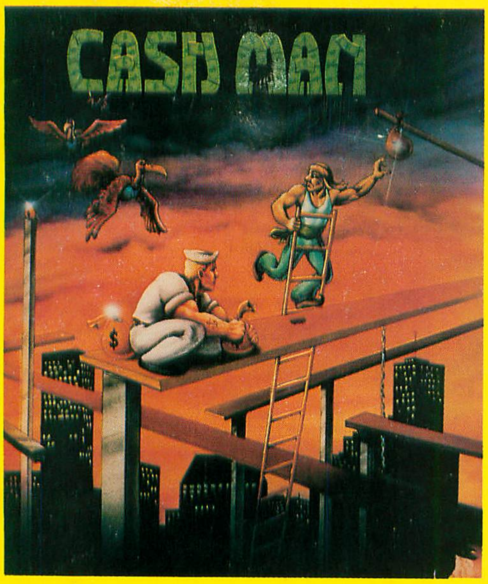
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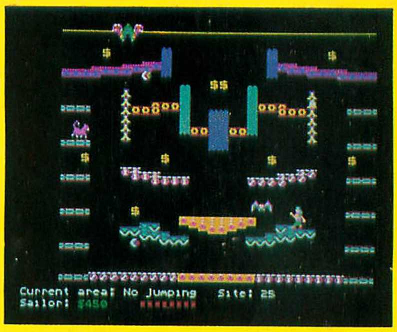
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